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REMEDIAL ACTION COMPLETION REPORT FOR SITE 3 SUPPLY SIDE LANDFILL NSTC  
GREAT LAKES IL  
12/1/2009  
TETRA TECH

Remedial Action  
Completion Report  
for  
Site 3 - Supply Side Landfill

Naval Station Great Lakes  
Great Lakes, Illinois



Naval Facilities Engineering Command  
Midwest

CONTRACT NUMBER N62467-04-D-0055  
Contract Task Order 512

December 2009

**REMEDIAL ACTION COMPLETION REPORT**

**SITE 3 – SUPPLY SIDE LANDFILL**

**NAVAL STATION GREAT LAKES  
GREAT LAKES, ILLINOIS**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
Naval Facilities Engineering Command Midwest  
201 Decatur Avenue, Building 1A  
Great Lakes, Illinois 60088**

**Submitted by:  
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**CONTRACT NUMBER N62467-04-D-0055  
CONTRACT TASK ORDER 512**

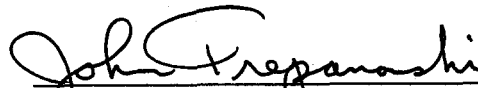
**DECEMBER 2009**

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## LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
cm/sec	Centimeters per second
Compass	Compass Construction Company, Inc.
CQA	Construction quality assurance
CTO	Contract Task Order
EE/CA	Engineering Evaluation/Cost Analysis
FOIA	Freedom of Information Act
GASA	Graef, Anhalt, Schloemer & Associates, Inc.
HDPE	High-density polyethylene
IAC	Illinois Administrative Code
Illinois EPA	Illinois Environmental Protection Agency
LUC	Land Use Control
LUC MOA	LUC Memorandum of Agreement
MSWLF	Municipal Solid Waste Landfill
NAVFAC	Naval Facilities Engineering Command
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NTCRA	Non-Time Critical Removal Action
O&M	Operation and maintenance
PCB	Polychlorinated biphenyls
RACR	Remedial Action Completion Report
RAO	Remedial Action Objective
SAP	Sampling and Analysis Plan
Site 3	Supply Side Landfill
SVOC	Semi-volatile organic compounds
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile organic compound
WP	Supply Side Landfill Cap Work Plan

## 1.0 OVERVIEW

This Remedial Action Completion Report (RACR) for Site 3 – Supply Side Landfill at Naval Station Great Lakes was prepared by Tetra Tech NUS, Inc. (TtNUS) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-04-D-0055, Contract Task Order (CTO) 512. This RACR was prepared in accordance with the CLEAN Contract, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300, and United States Environmental Protection Agency (U.S. EPA) guidance on presumptive remedy implementation for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) municipal landfill sites (1993) and the Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills (U.S. EPA, 1996).

The Navy prepared this RACR with a team including representatives from the Illinois Environmental Protection Agency (Illinois EPA), Naval Facilities Engineering Command (NAVFAC) Midwest, and the Navy's consultant, TtNUS. The main purpose of this RACR is to document the implementation of the Supply Side Landfill Cap Work Plan (WP) (ToITest, 2004).

### 1.1 SITE DESCRIPTION

Naval Station Great Lakes is located in Lake County, Illinois, approximately 30 miles north of Chicago and covers 1,632 acres and has 1.5 miles of shoreline along Lake Michigan (Figure 1-1). Naval Station Great Lakes began naval training operations in 1911 and is currently used to support training. The facility consists of the Administrative Command, Recruit Training Command (including the Navy's only boot camp), and Service School Command.

The Supply Side Landfill (Site 3) is located in the southwestern corner of Naval Station Great Lakes, adjacent to the facility boundary and south of the Supply Department warehouse (Building 3503). Site 3 extends almost to the westward extension of Alabama Avenue (Figure 1-2). The landfill covers approximately 15 acres [Graef, Anhalt, Schloemer & Associates, Inc. (GASA), 2004]. A railroad spur formerly crossed the southeastern portion of the landfill and serviced the warehouses north of the site.

The landfill was operated beginning in 1969 as a trench-type landfill with four parallel trenches. There was no intentional burning of refuse at this site. It is estimated that approximately 1 million cubic yards of refuse were disposed at the landfill. The total volume of material disposed at the landfill was limited by the size of the parcel. The main component of disposed material at the Supply Side Landfill was general office waste. No liquids, metals, or sanitary wastes were accepted for disposal at the Supply Side Landfill (Rogers, Golden and Halpern, 1986). The waste was deposited in two cells – one north of the former rail

road spur and one south/southeast of the former spur. Portions of these cells were located on top of lagoons and filter beds that were presumably used for wastewater treatment. Disposal operations ended at the landfill in 1983.

A soil cover was placed on the landfill in 1985. The cover grading and seeding were performed by the Navy Construction Battalion 401, a tenant command at Naval Station Great Lakes during that time period. Between 1999 and 2001, the Navy removed the railroad tracks, filled the area between the two cells, and placed additional cover on top of the landfill cells (GASA, 2004). A map of the landfill configurations following these grading operations and prior to the remedial action described herein is provided in Appendix A.

## **1.2 PRIOR REGULATORY ACTIVITIES**

To determine the permit status of the landfill (as stated below) a review of files regarding Site 3, obtained through the Freedom of Information Act (FOIA), was previously performed by Versar, Inc. [Versar to determine the permit status of the landfill.] No correspondence was obtained referring to a permit for the landfill. However, the following documents and correspondence regarding Site 3 regulatory closure activities were reviewed as identified in the Existing Conditions Investigation and Proposed Modifications report (Versar 2003):

- A closure plan developed by STS consultants, Ltd., titled Final Report for the Technical Services Being Provided to Develop a Closure Plan for the Naval Base (1983).
- Closure Plan Approval Letter from Illinois EPA to the Navy (September 9, 1983).
- Request for Certification of Landfill Closure from Illinois EPA to the Navy (December 9, 1987).
- Closure Activity Completion Status Letter as of July 23, 1985 from the Navy to Illinois EPA (October 11, 1988).
- Certification of Closure of the Supply Side Landfill; from Illinois EPA to the Navy (December 20, 1988). This document indicated that requirements of Title 35 of the Illinois Administrative Code Subpart G, Section 807.508, had been achieved and that the facility must continue to comply with post-closure plan requirements for 5 years following closure (Versar, 2003).

On April 11, 2003, a meeting was held between representatives of NAVFAC and the Illinois EPA to discuss the regulatory status of Site 3 and to assess options for reducing the long-term environmental impact of the landfill. It was determined that additional remedial actions should be performed at Site 3 as

part of a Non-Time Critical Removal Action (NTCRA) using the presumptive remedy of containment as listed in the U.S. EPA municipal landfill presumptive remedy guidance (U.S. EPA, 1993).

### 1.3 SITE INVESTIGATION AND EVALUATION ACTIVITIES

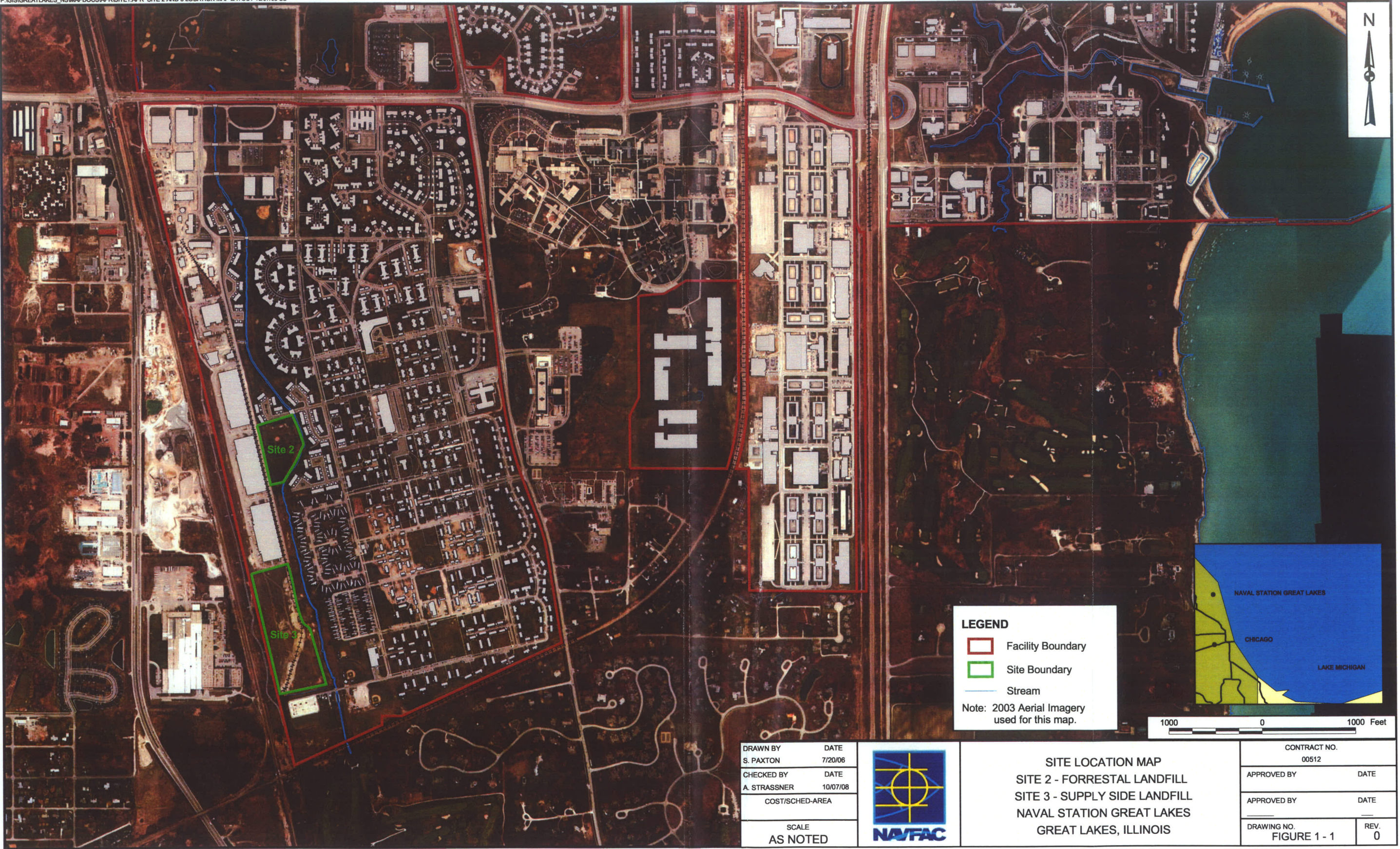
Site investigations were performed at Site 3 between 2001 and 2003. The 2001 investigation at the Site 3 landfill was to determine the presence of methane and volatile organic compounds (VOCs) in landfill gas. In 2002 and 2003, investigations were conducted to determine the thickness and properties of the existing soil cap and to collect samples of groundwater from the waste mass (ToITest, 2004). A streamlined risk assessment based on the results of these investigations was conducted in 2004 and presented in Engineering Evaluation/Cost Analysis (EE/CA) (GASA, 2004). The streamlined risk assessment identified the following risks to human health and the environment associated with Site 3:

- **Groundwater** – Although little documentation on the 1985 landfill cap construction was available, field testing indicated that the cap was generally over 2 feet thick and had a conductivity of less than  $1 \times 10^{-7}$  centimeters per second (cm/sec). However, it was determined that the landfill was not graded to minimize runoff velocity and that portions of the cap were subject to erosion in the future, increasing the potential for infiltration. Samples collected in support of the EE/CA indicated that Class II groundwater standards were exceeded in two of the wells, for two parameters – iron and chloride.
- **Surface Water** – Prior investigations indicated that, although the Illinois EPA General Use Water Quality Standards were exceeded in some surface water samples, the number of exceedances in upgradient samples was greater than the number in the downgradient samples. Therefore, it was determined that the landfill did not have a significant impact on surface water quality. However, as noted above, erosion of the cap could lead to a situation in which storm water would become exposed to landfill waste, causing an increase in surface water contaminant concentrations.
- **Direct Contact Risk** – There is no indication that hazardous waste has been placed in the landfill. As noted, the landfill cap is generally over two feet thick and limits the potential for direct contact. At present, there is some potential for erosion of the cap due to limited vegetation and potential build-up of methane gas that could limit the growth of additional vegetation. There are currently only limited access restrictions, and thin areas of the cap, if present, could become accessible to humans and wildlife.
- **Air** – Based on field investigations, the landfill cap appeared to be adequate to prevent airborne exposure to waste debris. Methane concentrations in the gas vents were generally less than 2 percent, and only one sample had a methane concentration greater than the Lower Explosive Limit

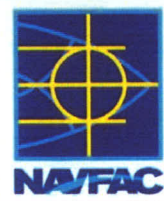
(LEL) of 5 percent. However, much higher concentrations were detected in the field investigation gas probes, indicating that the existing vents were not functioning properly.

In response to these findings, an Existing Conditions Investigation and Proposed Modifications report was prepared for Site 3 (Versar, 2003), which was followed by the EE/CA that evaluated alternatives for reducing the long-term environmental impact of the landfill (GASA, 2004). The EE/CA defined several Remedial Action Objectives (RAOs), as presented in Section 2.0, and recommended that the Panhandle Area be exhumed and consolidated with the main landfill, and that a new protective cover for the entire landfill be constructed to meet the RAOs. The new protective cover option was chosen because it would provide a high level of protection for human health and the environment and cost considerably less than comparable alternatives. The WP, as discussed in Section 3.0, was prepared by Toltest and details construction and management activities to address the RAOs.





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S. PAXTON	7/20/06
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A. STRASSNER	10/07/08
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SITE LOCATION MAP  
SITE 2 - FORRESTAL LANDFILL  
SITE 3 - SUPPLY SIDE LANDFILL  
NAVAL STATION GREAT LAKES  
GREAT LAKES, ILLINOIS

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## 2.0 REMEDIAL ACTION OBJECTIVES

As described in the previous section, the EE/CA performed for Site 3 established the RAOs and recommended the construction of a new protective cover as part of a voluntary NTCRA in accordance with the NCP. It was determined that the new protective cover would achieve the following RAOs:

- Reduce the risk of groundwater and surface water contamination through contact with the waste material, and reduce the risk of direct contact with the waste material for humans and wildlife.
- Improve the management of methane gas.
- Comply with Applicable or Relevant and Appropriate Requirements (ARARs).
- Minimize initial construction and long-term operating costs.
- Provide a finished surface that is suitable to serve the light recreational needs of the surrounding base community.

Chemical-specific, location-specific, and action-specific ARARs were established in Section 3 of the EE/CA. Although the Site 3 landfill had not received waste since 1983 and was therefore not subject to the standards for new solid waste landfills, the following Illinois Administrative Code (IAC) standards were deemed appropriate action-specific ARARs for the EE/CA review:

- Title 35, Part 807.305 (c) Final Cover.
- Title 35, Part 807.502 Closure Performance Standard.
- Title 35, Part 811.110, Closure and Written Closure Plan
  - Section (a) thru (c) - final slopes, contours, and configuration
  - Section (g) - deed notation
- Title 35, Part 811.111, Post-Closure Maintenance
  - Section (c) - maintenance and inspection
  - Section (d) - planned uses
- Title 35, Part 811.311, Landfill Gas Management Systems

- Title 35, Part 811.314, Final Cover System
- Title 35, Part 811.318, Design, Construction, and Operation of  
Groundwater Monitoring Systems
- Title 35, Part 811.319, Groundwater Monitoring Programs
- Title 35, Part 811.320, Groundwater Quality Standards
- Title 35, Part 811.322 Final Slope and Stabilization -  
Section (a) through (c) - grade, drainage, and vegetation
- Title 35, Part 811.324, Corrective Action Measures for Municipal Solid Waste Landfill (MSWLF) Units

### 3.0 REMEDIAL ACTIONS

In June 2004, a Supply Side Landfill Cap WP (Toltest, 2004) for Site 3 was prepared and submitted by TolTest detailing the remedial actions required to implement and construct the Supply Side landfill cap. The proposed modifications report (Versar, 2003) was included as part of the WP along with construction drawings, specifications, a project schedule, a Health and Safety Plan, and a Stormwater Pollution Prevention Plan. Additionally, the WP was prepared in accordance with EE/CA (GASA, 2004) recommendations and to meet the RAOs. Seven key elements identified in the WP included the following:

- Permitting.
- Installation of erosion control measures and site fencing.
- Installation of a passive landfill gas collection system.
- Placing/compacting cover material.
- Placing of topsoil and seeding.
- Long-term maintenance.
- Implementation of land use controls (LUCs) that allow for future use of the open land on the landfill surfaces while preventing potentially adverse/damaging activities and allowing unrestricted limited use of the adjacent areas.

The specifications and design drawings for the remedial action were provided in the WP along with operation and maintenance (O&M) and construction quality assurance (CQA) requirements. The following sections present the major elements of the planned construction activities and follow-on remedial actions.

#### 3.1 COVER SYSTEM

Prior to installation of the cover system, the landfill sub grade was to be regraded to create a flat surface with a gradual slope from west to east across the top of the landfill, as shown on the proposed topsoil grading plan included in Appendix B. A 3-percent slope was to be used for the top surface of the landfill for drainage and erosion protection, and a 3 (horizontal) to 1 (vertical) slope was used around the perimeter of the landfill.

As discussed in the EE/CA and as presented in the WP the final cover was to consist of 18 inches of low-permeability clay with 6 inches of topsoil to protect against erosion. Design drawings from the WP pertaining to placement of the landfill cover system included the following:

- |   |           |
|---|-----------|
| • Existing Top of Waste Contours                          | Drawing 3 |
| • Existing Cover Soil Thickness Isopach Map               | Drawing 4 |
| • Proposed Re-Grading Plan (Top of Waste/Soil)            | Drawing 5 |
| • Proposed Top of 18" of Low Permeability Soil Layer Plan | Drawing 6 |

Soil cover thicknesses and in-place density measurements were to be performed in accordance with the WP.

### 3.2 GAS MANAGEMENT SYSTEM

Prior investigations concluded that elevated gas concentrations existed throughout the landfill area. Because the existing gas vents were generally ineffective and would be in the way during regrading activities, it was decided that the vents would be removed and a new passive methane gas venting system would be installed.

The new venting system was designed to consist of shallow trenches excavated in the waste material, with horizontal collector pipes in granular bedding. The gas extraction laterals were designed to consist of perforated high-density polyethylene (HDPE) pipes in trenches with pea gravel backfill. Gravel-filled boreholes will be placed along the trenches approximately 100 feet apart. Each trench was designed to be equipped with a top sheet of flexible geo-membrane to protect the gravel pack from surface water infiltration, and a vent assembly that terminates above ground with a stainless steel wind-driven rotary ventilator. A control valve was designed to be installed below the ventilator for isolation of the gas vent during gas vent maintenance periods.

The eastern end of the gas extraction trenches were designed to be equipped with trench cleanout risers, which can be used to remove any liquids that accumulate at the trench low points. The gas extraction trenches were to be sloped from west to east, consistent with the cover slope. The layout of the gas management system and system details are provided on Design Drawings 13 and 14 from the WP.

### 3.3 INSTITUTIONAL CONTROLS

The action includes institutional control components which were to be implemented to prevent exposure to impacted soil and groundwater. Site 3 will be included in the Land Use Control Memorandum of Agreement (LUC MOA) between the Navy and Illinois EPA, and the Site 3 LUCs are as follows:

- **Property Use Restriction** - Site 3 does not pose a threat to human health or the environment under a light recreational use. Under no circumstances is Site 3 to be utilized for residential purposes.

- **Groundwater Use Restriction** - The installation of groundwater wells (other than environmental evaluation or monitoring wells) is prohibited to prevent exposure to contaminated groundwater at Site 3. In addition, the installation of groundwater wells (other than environmental evaluation or monitoring wells) is prohibited in all geographic areas of Naval Station Great Lakes by Naval Station Great Lakes Instruction 11130.1 (Ground Water Use Restrictions).
- **Soil Disturbance Restriction** - The excavation and uncontrolled removal of soil from Site 3 without prior review of work plans by the Navy and Illinois EPA is prohibited. These reviews are necessary to ensure adequate worker health and safety precautions and to confirm proper management of contaminated materials.
- **Maintenance of Landfill Cover** - A landfill cover at the site prevents exposure to contaminated soil and infiltration of groundwater. This cover will be inspected on a semi-annual basis and maintained.

LUC compliance inspections will be conducted annually to certify that all controls are being properly enforced. A copy of the annual compliance certification form is provided in Appendix C and a copy of the LUC Implementation Plan is provided in Appendix D.

### 3.4 MONITORING AND INSPECTIONS

#### 3.4.1 Groundwater Monitoring

Groundwater monitoring will be conducted as part of on-going post-closure activities at the Supply Side Landfill. The groundwater monitoring program is designed to determine the effectiveness of the landfill cap in preventing leaching of constituents to groundwater. The ultimate goal of the groundwater monitoring program is to attain groundwater protection requirements by identifying the migration of any contaminants from the site.

Groundwater samples will be collected quarterly and analyzed for Illinois EPA provided L1 and L2 parameters as listed in Appendix E. The samples will be collected from six monitoring wells located upgradient and downgradient of the landfill. After the first eight quarters of monitoring, the monitoring data will be evaluated and a request may be submitted to Illinois EPA for consideration of reduction in the frequency of monitoring to semi-annual and in the parameters monitored. The eighth quarter of sampling was conducted in August 2008.

**3.4.2     Inspections**

As described in the previous section, the LUCs will be inspected on an annual basis to ensure that the controls are properly enforced. The inspections will include observations of the erosion control measures, the passive landfill gas collection system, and the landfill cover for signs of damage, and the site fence will also be inspected for damage and for signs of unauthorized access to the site. A copy of the annual LUC compliance certification form is provided in Appendix C.

## 4.0 DEMONSTRATION OF COMPLETION

Construction activities associated with the Site 3 WP were performed in July through August 2004. Compass Construction Company Inc. (Compass) of Waukegan, Illinois, served as the earthwork contractor performing on-site construction of the landfill cap and methane venting system under the direction of TolTest. GASA performed surveying and construction quality control including in-place soil density testing.

The completion of remedial actions at Site 3 have been documented and demonstrated through a number of mechanisms, including daily construction reports, drawings, and various reports. The following sections discuss the major elements of the construction and follow-on remedial actions along with the documentation of their completion.

### 4.1 COVER SYSTEM

The WP established, through drawings and specifications, requirements for the cover system. In summary, the cover system was designed to have a 3-percent grade, side slopes of 3 horizontal to 1 vertical, an 18-inch compacted clay layer, and a 6-inch topsoil layer. A review of the recent as-built survey prepared in August 2008 by Graef, Anhalt, Schloemer, and Associates Inc. (GASA) indicates that the cover system meets the slope requirements. As discussed below, further assessments were required to confirm the thicknesses of the cover system layers.

Tetra Tech utilized three maps presenting construction survey data prepared throughout the 2004 construction period by GASA to assess the layer thicknesses. These maps, which are provided in Appendix F, presented spot elevations of the bottom of clay (top of graded waste), top of clay, and top of topsoil. Thicknesses of the overall cover, the compacted clay layer, and the topsoil layer were determined through comparison of the survey data on these maps.

An assessment of the total cover thickness was performed by Tetra Tech by comparing elevations from the GASA's 2004 construction surveys of the top of graded waste elevations with the elevations of the final top soil. The results of this assessment are presented in the form of an isopach map prepared by Tetra Tech provided on Figure 4-1. This assessment indicated that the cover system is thicker than the specified amount of 2 feet across most of the landfill. It does indicate, however, that there is a primary area of approximately 1.8 acres, located in the central portion of the landfill, where the total thickness is less than 2 feet. It should also be noted that there is a small area at the south-east corner of the landfill, outside of the primary area of concern, where the apparent lack of cover is suspected to be related to the modification of the ground surface and construction of a ramp for site access.

Further evaluations were performed by Tetra Tech using the GASA 2004 construction surveys to assess the thicknesses of both the compacted clay and topsoil cover layers. Initial evaluations of the clay layer thicknesses were performed by comparing the construction surveys of the bottom of clay with the top of clay. This assessment indicated the site is covered with 18 inches of compacted clay except for four small areas. As shown on Figure 4-2, these four areas totaled approximately 0.6 acres, with thicknesses ranging from 0 to 4 inches less than the specified amount of 18 inches. Although preliminary investigations suggest clay layer thicknesses are insufficient, historical data indicate additional clay covers were installed during previous landfill cover installation efforts. Past investigations of the landfill cover (Versar, 2003) indicate the presence of a previously placed clayey cover materials beneath the new compacted clay layer. The previously placed materials are part of the initial landfill cover placed in 2001, and based on test boring data, range between 4.5 and 13 feet in thickness beneath the base of the new cover. Test boring locations and thicknesses of the original cover at those locations are shown on Figure 4-2. With the combination of the new compacted clay layer (placed in 2004) and the old landfill cover (placed in 2001), the suspect areas meet the general closure requirements of the WP to have 18 inches of clay over top the landfill waste.

The assessment of the topsoil layer thickness, which compared the GASA 2004 construction survey data for top of clay with that of the top of topsoil, indicated that the specified six inch top soil layer was deficient up to five inches of material over an area of about 1.6 acres (see Figure 4-3). In light of these apparent deficiencies, field verification was performed by Tetra Tech in September 2009 to assess the actual thickness within the suspect area. The field verification program consisted of using a bucket auger to drill 25 four-inch borings at the site. Borings were located on two radial grid patterns centered within two primary areas of questionable thicknesses. Conditions at each boring location were evaluated to determine the depth to the top of clay, and the thickness of the topsoil. The locations of sampling points and the thickness of the topsoil cover measured at those points are shown on Figure 4-3. The results of the field investigation indicated that, except for one localized point, the measured topsoil thickness exceeded six inches. The point of exception could have been caused by any number of things, including a subsurface anomaly in the top of the clay layer at that specific point. Topsoil thicknesses within 20 feet of either side of the suspect point were measured to be seven and nine inches.

Based on the field confirmation, it appears the 2004 construction survey of the top of topsoil used in Tetra Tech's cover evaluation may have been interim in nature, and that additional topsoil was placed following the survey to ensure appropriate and required topsoil thicknesses were installed. Through the combination of construction survey data and field verification, it is concluded that the general closure requirements of the WP to have six inches of top soil over the landfill have been met.



The excavation, backfill, installation, and restoration activities performed for the new cover were detailed and documented in the daily construction reports compiled by the construction oversight contractor, GASA. These reports, which date from July 28, 2004 to October 20, 2004, include the results of laboratory testing of borrow soils along with the results of in-place measurements and density testing of cover materials. Daily construction reports are provided in Appendix F.

It should be noted that the northern portion of the landfill has a cover thickness in excess of 4 feet. Several weeks after the new cap was installed, suspect asbestos containing material was observed in the new topsoil on the northern half of the landfill. The Navy identified the suspect material as transite asbestos, and requested approval from Illinois EPA to place additional (non-friable) transite-impacted soil on the landfill, followed by the installation of a geotextile cover and 6 additional inches of clean topsoil. The Illinois EPA approved the proposed plan in April 2005, and the additional soil and cover material were installed between October 11, 2005 and October 20, 2005. The area impacted by the additional fill was located at the northern end of the landfill, and was approximately 330 feet by 550 feet. Approximately 12,000 cubic yards of asbestos containing soil were placed in this area (TolTest, 2006).

As a deviation from the WP, a 12 foot wide access road, which was originally planned to traverse the Site, was not constructed. The road was to be constructed of a 12 inch thick layer of coarse aggregate overlaying a layer of geotextile.

#### **4.2 GAS MANAGEMENT SYSTEM**

The WP also established, through drawings and specifications, requirements for the gas management system. Surveyed locations of the gas vents indicate that both the vents themselves and the collection trench have been installed at location in accordance with the plan. These locations are shown on the as-built drawing in Appendix G. Subsurface construction including trenching and pipe installation can only be confirmed through construction inspections reports. These reports indicate that the system components were installed in accordance with the proposed plans using the specified materials. Review of the exposed portions of the system, such as the vent pipes, indicates that they were built in accordance with the proposed construction details.

#### **4.3 MONITORING WELLS**

Groundwater monitoring has and is being conducted as part of on-going post-closure activities at the Supply Side Landfill via six monitoring wells as outlined in the WP. Monitoring well locations are identified on the as-built drawing in Appendix G and Figure 1-2, and well construction details are provided in Appendix H.

Groundwater monitoring is performed in accordance with the Sampling and Analysis Plan (SAP) (TtNUS, 2007). The monitoring has been conducted on a quarterly basis since August/September 2006, and associated monitoring reports have been prepared and submitted to the Illinois EPA. Although several contaminants have been detected, the concentrations are consistent with historical results. Exceedances of regulatory monitoring criteria have included mainly inorganics such as aluminum, iron, manganese, arsenic, and lead. It has been recommended that collection of filtered samples for dissolved metals analysis (in addition to total metals) should be considered for future monitoring events to evaluate the potential impact of suspended solids on inorganics concentrations.

Analytical results from the seven recent rounds of groundwater monitoring indicate that no VOCs, semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), or herbicides were detected at concentrations greater than the monitoring criteria.

#### **4.4 INSTITUTIONAL CONTROLS**

Access to the Site is limited by fencing. Institutional controls in the form of LUCs for Site 3 will be implemented through the LUC MOA via a LUC Implementation Plan (TtNUS, 2009) to restrict any groundwater use and soil disturbance.

#### **4.5 INSPECTION AND MAINTENANCE**

The cover system has been vegetated in accordance with the WP. Since installed, the cover system is inspected and maintained on a regular basis. Erosion has and will be repaired as required.





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SITE 3 SUPPLY SIDE LANDFILL  
NAVAL STATION GREAT LAKES  
GREAT LAKES, ILLINOIS

CONTRACT NUMBER CTO 0512	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 4-1	0



CONTRACT NUMBER CTO 512	
APPROVED BY _____	DATE _____
APPROVED BY _____	DATE _____
FIGURE NO. FIGURE 4-2	REV 0





DRAWN BY	DATE
K. MOORE	10/9/09
CHECKED BY	DATE
B. CUMMINGS	10/29/09
REVISED BY	DATE
SCALE	
AS NOTED	



SITE 3 SUPPLY SIDE LANDFILL  
TOP SOIL LAYER THICKNESS ASSESSMENT  
NAVAL STATION GREAT LAKES  
GREAT LAKES, ILLINOIS

CONTRACT NUMBER 00512	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 4-3	0



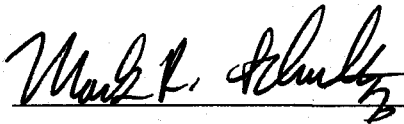
## **5.0 ONGOING ACTIVITIES**

In accordance with the institutional controls and monitoring components of the remedy, the following ongoing activities are/will be performed:

- Annual inspection of the site, including fencing and signs, cap conditions, storm water control features, and monitoring wells.
- Enforcement of LUCs per the LUC Implementation Plan that will be part of the LUC MOA.
- Maintenance of the cap and wells, as needed, based on LUC inspection results.
- Groundwater monitoring and reporting.

## 6.0 CERTIFICATION

The remedial actions described in the EE/CA and WP for the Supply Side Landfill have been completed, and the RAOs have been achieved. Long-term management of the site, including cap inspection and maintenance, institutional controls, inspections and groundwater monitoring, is ongoing to make sure that the RAOs will continue to be fulfilled.



Mark R. Schultz

Environmental BLC/Director

NAVFAC Midwest/CNR N40

12-16-09

Date

## **REFERENCES**

Graef, Anhalt, Schloemer & Associates, Inc. (GASA), 2004. Engineering Evaluation/Cost Analysis (EE/CA), Supply Side Landfill, Great Lakes, Illinois. Milwaukee, Wisconsin. February.

Rogers, Golden and Halpern, 1986. Initial Assessment Study, Naval Complex Great Lakes, Great Lakes, Illinois. March.

Toltest (Toltest, Inc.), 2004. Work Plan – Supply Side Landfill Cap, Naval Station Great Lakes, Great Lakes, Illinois. Waukegan, Illinois. June.

Toltest, 2006. Delivery Order Closure Report, Relocate Stockpiled ACM Soils from Camp Moffett Area to Supplyside Landfill, Naval Station Great Lakes, Great Lakes, Illinois. Waukegan, Illinois. June.

TtNUS (Tetra Tech NUS, Inc.), 2007. Sampling and Analysis Plan for Site 2 – Forrestal Landfill and Site 3 – Supplyside Landfill, Naval Station Great Lakes, Great Lakes, Illinois. King of Prussia, Pennsylvania. December.

TtNUS, 2008. LUC Implementation Plan

U.S. EPA (United States Environmental Protection Agency), 1993. Presumptive Remedy for CERCLA Municipal Landfill Sites. U.S. EPA/540/F-93-035. Office of Solid Waste and Emergency Response, Directive 9355.0-49FS, Washington D.C.

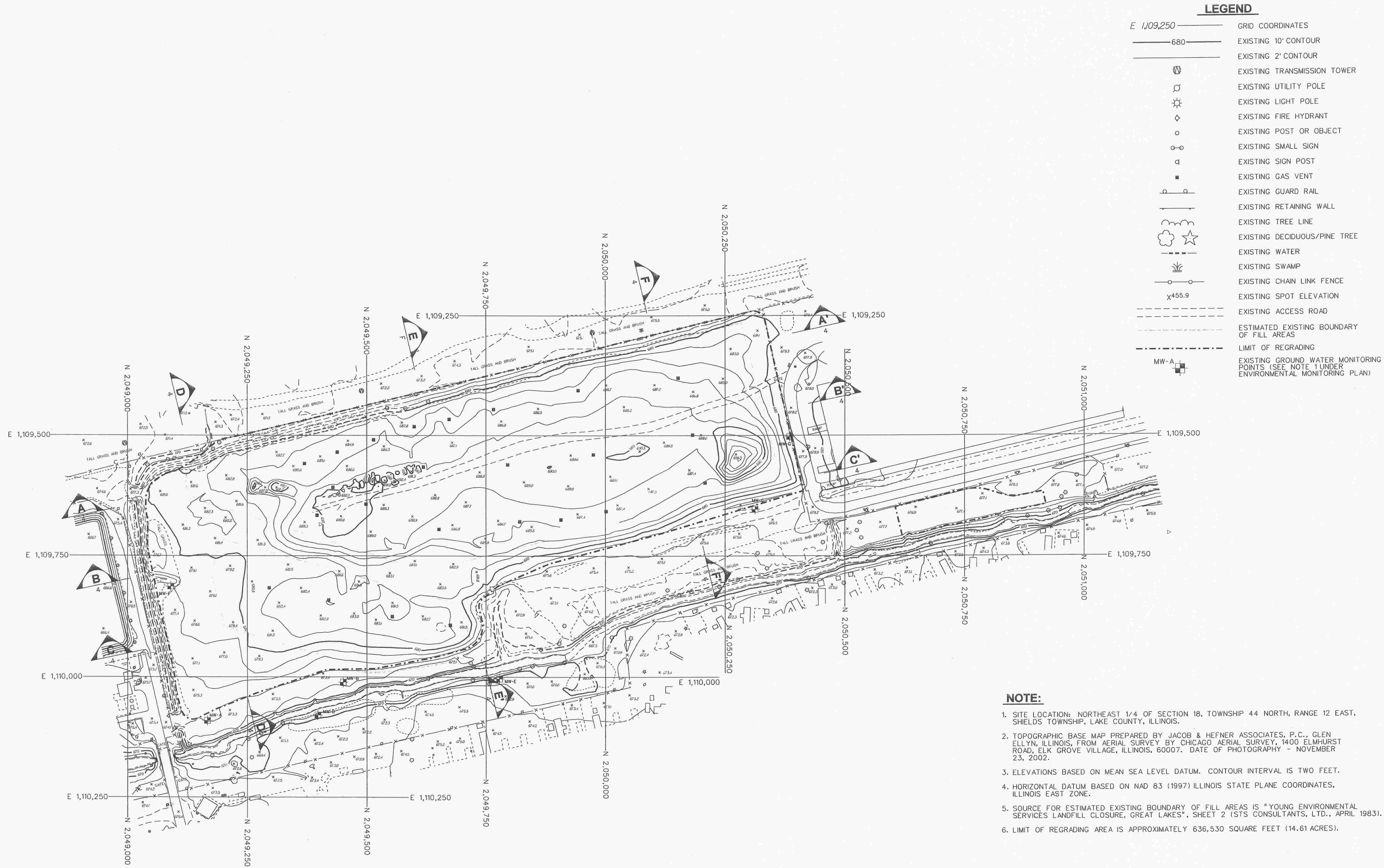
U.S. EPA, 1996. Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills. U.S. EPA/540/F-96/020. Office of Solid Waste and Emergency Response, Directive 9355.0-67FS, Washington D.C.

Versar, Inc. (Versar), 2003. Existing Conditions Investigation and Proposed Modifications to Landfill Cover System, Supply Side Landfill, Naval Station Great Lakes, Illinois. Lombard, Illinois. August.



## **APPENDIX A**

### **PRE-CONSTRUCTION SITE MAP**



LEGEND	
E 1,109,250	GRID COORDINATES
680	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	EXISTING TRANSMISSION TOWER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING FIRE HYDRANT
	EXISTING POST OR OBJECT
	EXISTING SMALL SIGN
	EXISTING SIGN POST
	EXISTING GAS VENT
	EXISTING GUARD RAIL
	EXISTING RETAINING WALL
	EXISTING TREE LINE
	EXISTING DECIDUOUS/PINE TREE
	EXISTING WATER
	EXISTING SWAMP
	EXISTING CHAIN LINK FENCE
X455.9	EXISTING SPOT ELEVATION
	EXISTING ACCESS ROAD
	ESTIMATED EXISTING BOUNDARY OF FILL AREAS
	LIMIT OF REGRADING
MW-A	EXISTING GROUND WATER MONITORING POINTS (SEE NOTE 1 UNDER ENVIRONMENTAL MONITORING PLAN)

- NOTE:**
1. SITE LOCATION: NORTHEAST 1/4 OF SECTION 18, TOWNSHIP 44 NORTH, RANGE 12 EAST, SHIELDS TOWNSHIP, LAKE COUNTY, ILLINOIS.
  2. TOPOGRAPHIC BASE MAP PREPARED BY JACOB & HEFNER ASSOCIATES, P.C., GLEN ELLYN, ILLINOIS, FROM AERIAL SURVEY BY CHICAGO AERIAL SURVEY, 1400 ELMHURST ROAD, ELK GROVE VILLAGE, ILLINOIS, 60007. DATE OF PHOTOGRAPHY - NOVEMBER 23, 2002.
  3. ELEVATIONS BASED ON MEAN SEA LEVEL DATUM. CONTOUR INTERVAL IS TWO FEET.
  4. HORIZONTAL DATUM BASED ON NAD 83 (1997) ILLINOIS STATE PLANE COORDINATES, ILLINOIS EAST ZONE.
  5. SOURCE FOR ESTIMATED EXISTING BOUNDARY OF FILL AREAS IS "YOUNG ENVIRONMENTAL SERVICES LANDFILL CLOSURE, GREAT LAKES", SHEET 2 (STS CONSULTANTS, LTD., APRIL 1983).
  6. LIMIT OF REGRADING AREA IS APPROXIMATELY 636,530 SQUARE FEET (14.61 ACRES).

**ENVIRONMENTAL MONITORING PLAN:**

1. THE ENVIRONMENTAL MONITORING PLAN CONSISTS OF THE GROUND WATER MONITORING WELLS SHOWN, LABELED MW-A THROUGH MW-G. MW-F AND MW-G LOCATED WITHIN THE REGRADING AREA ARE TO BE EXTENDED AS NECESSARY.

DRN PAA PAA	8-13-2003	DES PAA PAA	8-13-2003	CHK CR	8-13-2003	APP A/D	8-13-2003
<b>Vernal inc.</b> 200 W. 22nd STREET, SUITE 250 LOWEARD, IL 60148							
EXISTING CONDITIONS INVESTIGATION AND PROPOSED MODIFICATIONS TO LANDFILL COVER SYSTEM SUPPLY SIDE LANDFILL NAVAL STATION GREAT LAKES							
DATE AUGUST PROJECT NO							

## **APPENDIX B**

### **PROPOSED GRADING PLAN**



CONTROL POINT NUMBER	GRID COORDINATES		REGRADING PLAN	
	NORTHING	EASTING	PROPOSED (FT.)	RECORD (FT.)
1	2,049,038.15	1,109,650.00	676.27	
2	2,049,042.57	1,109,700.00	674.99	
3	2,049,045.17	1,109,800.00	673.92	
4	2,049,050.01	1,109,801.65	677.90	
5	2,049,055.04	1,109,650.00	682.00	
6	2,049,055.62	1,109,800.00	673.92	
7	2,049,061.42	1,109,810.93	682.00	
8	2,049,063.94	1,109,700.00	682.00	
9	2,049,066.06	1,109,850.00	673.64	
10	2,049,068.17	1,109,750.00	681.87	
11	2,049,074.80	1,109,800.00	680.09	
12	2,049,075.89	1,109,650.00	682.60	
13	2,049,078.86	1,109,900.00	671.83	
14	2,049,079.13	1,109,620.70	682.60	
15	2,049,081.44	1,109,850.00	678.65	
16	2,049,084.19	1,109,700.00	682.60	
17	2,049,088.08	1,109,900.00	677.16	
18	2,049,088.34	1,109,750.00	682.47	
19	2,049,088.61	1,109,950.00	673.24	
20	2,049,094.72	1,109,850.00	675.17	
21	2,049,094.98	1,109,800.00	680.56	
22	2,049,098.40	1,110,000.00	671.76	
23	2,049,100.03	1,109,574.14	677.60	
24	2,049,100.00	1,109,587.82	682.00	
25	2,049,100.00	1,109,608.00	682.60	
26	2,049,101.15	1,109,999.96	672.67	
27	2,049,101.62	1,109,650.00	673.17	
28	2,049,105.91	1,109,750.00	687.13	
29	2,049,105.98	1,109,650.00	690.03	
30	2,049,106.67	1,110,050.00	671.81	
31	2,049,107.49	1,110,050.00	672.07	
32	2,049,108.26	1,109,900.00	677.66	
33	2,049,108.82	1,109,700.00	682.56	
34	2,049,110.61	1,109,800.00	685.65	
35	2,049,114.90	1,109,950.00	675.58	
36	2,049,116.85	1,109,650.00	684.15	
37	2,049,116.52	1,110,081.70	671.87	
38	2,049,121.31	1,110,000.00	673.31	
39	2,049,123.60	1,109,900.00	682.65	
40	2,049,130.17	1,110,052.74	672.56	
41	2,049,132.23	1,109,950.00	681.14	
42	2,049,140.33	1,110,000.00	679.63	
43	2,049,146.83	1,110,038.17	678.80	
44	2,049,150.00	1,109,543.69	668.84	
45	2,049,150.00	1,109,584.60	682.00	
46	2,049,150.00	1,109,605.08	682.60	
47	2,049,150.00	1,109,634.68	680.12	
48	2,049,167.06	1,110,053.12	677.88	
49	2,049,179.60	1,110,016.42	678.00	
50	2,049,184.12	1,109,514.39	668.52	
51	2,049,190.15	1,110,017.03	678.00	
52	2,049,190.27	1,110,000.65	679.21	
53	2,049,198.38	1,110,009.50	678.89	
54	2,049,200.00	1,109,507.97	669.35	
55	2,049,200.00	1,109,555.35	682.00	
56	2,049,200.00	1,109,562.17	682.60	
57	2,049,200.00	1,109,617.46	690.22	
58	2,049,200.00	1,110,040.87	677.97	
59	2,049,200.00	1,110,060.67	671.82	
60	2,049,250.00	1,109,496.30	669.78	
61	2,049,250.00	1,109,534.27	682.08	
62	2,049,250.00	1,109,554.87	682.69	
63	2,049,250.00	1,109,580.70	690.89	
64	2,049,250.00	1,109,750.00	685.99	
65	2,049,250.00	1,110,000.00	678.76	
66	2,049,250.00	1,110,020.86	678.15	
67	2,049,250.00	1,110,040.76	671.97	
68	2,049,300.00	1,109,484.15	669.75	
69	2,049,300.00	1,109,522.00	682.01	

CONTROL POINT NUMBER	GRID COORDINATES		REGRADING PLAN	
	NORTHING	EASTING	PROPOSED (FT.)	RECORD (FT.)
70	2,049,300.00	1,109,542.59	682.62	
71	2,049,300.00	1,109,568.03	690.86	
72	2,049,300.00	1,110,003.44	678.26	
73	2,049,300.00	1,110,022.95	672.09	
74	2,049,350.00	1,109,472.00	669.78	
75	2,049,350.00	1,109,509.70	681.99	
76	2,049,350.00	1,109,530.32	682.60	
77	2,049,350.00	1,109,555.72	690.82	
78	2,049,350.00	1,109,986.81	678.35	
79	2,049,350.00	1,110,006.53	672.10	
80	2,049,400.00	1,109,459.85	670.47	
81	2,049,400.00	1,109,496.38	682.00	
82	2,049,400.00	1,109,517.63	682.60	
83	2,049,400.00	1,109,543.36	690.78	
84	2,049,400.00	1,109,970.16	678.43	
85	2,049,400.00	1,109,990.12	672.11	
86	2,049,450.00	1,109,447.70	671.21	
87	2,049,450.00	1,109,481.31	682.00	
88	2,049,450.00	1,109,502.08	682.60	
89	2,049,450.00	1,109,527.75	690.84	
90	2,049,450.00	1,109,966.37	678.15	
91	2,049,450.00	1,109,984.44	672.12	
92	2,049,500.00	1,109,442.86	682.60	
93	2,049,500.00	1,109,467.80	682.01	
94	2,049,500.00	1,109,488.41	682.61	
95	2,049,500.00	1,109,513.87	690.84	
96	2,049,500.00	1,109,750.00	684.01	
97	2,049,500.00	1,109,966.64	677.74	
98	2,049,500.00	1,109,983.47	672.13	
99	2,049,500.00	1,109,423.41	671.86	
100	2,049,550.00	1,109,455.37	682.00	
101	2,049,550.00	1,109,475.98	682.60	
102	2,049,550.00	1,109,501.35	690.81	
103	2,049,550.00	1,109,961.29	677.50	
104	2,049,550.00	1,109,976.89	672.37	
105	2,049,600.00	1,109,411.28	671.74	
106	2,049,600.00	1,109,442.86	682.60	
107	2,049,600.00	1,109,463.57	682.60	
108	2,049,600.00	1,109,488.84	690.77	
109	2,049,600.00	1,109,513.80	677.32	
110	2,049,600.00	1,109,967.74	672.72	
111	2,049,650.00	1,109,399.09	671.80	
112	2,049,650.00	1,109,430.59	682.00	
113	2,049,650.00	1,109,451.18	682.60	
114	2,049,650.00	1,109,476.32	690.74	
115	2,049,650.00	1,109,945.85	677.15	
116	2,049,650.00	1,109,967.45	673.39	
117	2,049,700.00	1,109,386.89	682.00	
118	2,049,700.00	1,109,416.39	682.00	
119	2,049,700.00	1,109,438.98	682.60	
120	2,049,700.00	1,109,463.99	690.70	
121	2,049,700.00	1,109,931.38	677.18	
122	2,049,700.00	1,109,944.22	673.06	
123	2,049,715.26	1,109,850.00	679.41	
124	2,049,717.78	1,109,920.86	677.34	
125	2,049,727.22	1,109,900.00	677.87	
126	2,049,728.87	1,109,920.02	680.22	
127	2,049,735.59	1,109,850.00	672.76	
128	2,049,742.57	1,109,900.00	672.83	
129	2,049,750.00	1,109,374.69	673.54	
130	2,049,750.00	1,109,400.86	682.00	
131	2,049,750.00	1,109,421.49	682.60	
132	2,049,750.00	1,109,447.48	690.78	
133	2,049,750.00	1,109,500.00	689.26	
134	2,049,750.00	1,109,750.00	682.03	
135	2,049,750.00	1,109,809.28	680.32	
136	2,049,750.00	1,109,832.96	674.37	
137	2,049,800.00	1,109,362.49	673.66	
138	2,049,800.00	1,109,388.29	682.00	

CONTROL POINT NUMBER	GRID COORDINATES		REGRADING PLAN	
	NORTHING	EASTING	PROPOSED (FT.)	RECORD (FT.)
139	2,049,800.00	1,109,408.91	682.60	
140	2,049,800.00	1,109,434.19	690.77	
141	2,049,800.00	1,109,739.97	682.60	
142	2,049,800.00	1,109,801.62	673.92	
143	2,049,850.00	1,109,350.29	673.78	
144	2,049,850.00	1,109,375.71	670.00	
145	2,049,850.00	1,109,396.33	682.60	
146	2,049,850.00	1,109,421.52	690.74	
147	2,049,850.00	1,109,760.73	680.93	
148	2,049,850.00	1,109,780.12	670.07	
149	2,049,900.00	1,109,338.09	675.16	
150	2,049,900.00	1,109,359.69	682.00	
151	2,049,900.00	1,109,380.85	682.60	
152	2,049,900.00	1,109,406.79	690.77	
153	2,049,900.00	1,109,742.09	681.07	
154	2,049,950.00	1,109,761.89	674.89	
155	2,049,950.00	1,109,325.89	674.58	
156	2,049,950.00	1,109,348.59	682.01	
157	2,049,950.00	1,109,368.97	682.60	
158	2,049,950.00	1,109,393.92	690.75	
159	2,049,950.00	1,109,729.27	681.05	
160	2,049,950.00	1,109,747.76	675.09	
161	2,050,000.00	1,109,313.33	673.89	
162	2,050,000.00	1,109,338.73	682.00	
163	2,050,000.00	1,109,359.35	682.59	
164	2,050,000.00	1,109,383.95	690.64	
165	2,050,000.00	1,109,500.00	682.60	
166	2,050,000.00	1,109,716.99	681.01	
167	2,050,000.00	1,109,734.33	675.38	
168	2,050,000.00	1,109,301.01	672.93	
169	2,050,050.00	1,109,327.91	682.00	
170	2,050,050.00	1,109,347.93	682.60	
171	2,050,050.00	1,109,371.81	682.00	
172	2,050,050.00	1,109,704.79	680.98	
173	2,050,050.00	1,109,720.90	675.76	
174	2,050,100.00	1,109,289.26	672.64	
175	2,050,100.00	1,109,316.40	682.60	
176	2,050,100.00	1,109,340.84	682.60	
177	2,050,100.00	1,109,365.05	690.40	
178	2,050,100.00	1,109,690.38	682.67	

## **APPENDIX C**

### **ANNUAL COMPLIANCE CERTIFICATION**

### Site 3 Annual LUC Compliance Certificate

Supply Side Landfill

EPA I.D. No. IL7170024577

Illinois EPA No. 0971255004

Property Owner: \_\_\_\_\_

Property Address: \_\_\_\_\_

Is evaluation for all or a portion of the Site 3 property?\* \_\_\_\_\_

\*If evaluating only a portion of the site, attach a figure identifying the portion being evaluated.

This evaluation covers the period from **1 January** \_\_\_\_\_ **through 31 December** \_\_\_\_\_.

Form shall be submitted by **1 March** of the year following the reporting period.

### Certification Checklist

	In Compliance	Non-Compliance	See Comment
1) Parcel not being used for residential use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) No excavation or uncontrolled removal of Site soil (unless previously approved by Illinois EPA and the Navy).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No groundwater being used for human consumption or other purposes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Landfill cover in good condition; no gullies, rills, or other erosion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) No tampering with or damage to any Navy wells or remediation systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Landfill properly vegetated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Presence of invasive, deep rooted species.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Gas vent rotary ventilator in working order and spinning freely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) No damage to site fence or unauthorized access to the site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I, the undersigned, hereby certify that I am an authorized representative of the above-named property owner and that the above-described Land Use Controls have been complied with for the period noted. Alternately, any known deficiencies and owner's completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiency(ies).

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Mail completed form(s) to Illinois EPA.

## **APPENDIX D**

### **LUC IMPLEMENTATION PLAN**

LAND USE CONTROL  
IMPLEMENTATION PLAN  
SUPPLY SIDE LANDFILL – SITE 3  
LUC #12

1. Site Description: The Supply Side Landfill (Site 3) began operation in 1969 and was closed in 1983. The landfill was operated as a trench-type landfill, and covers an area of approximately 400 feet by 1,000 feet. There was no intentional burning of refuse at this Site
2. Site Location: Site 3 is located in the southwest corner of Naval Station Great Lakes, south of Superior Street, north of Alabama Avenue, and west of Skokie Creek.
3. LUC Objective(s): Restrict reuse and prevent exposure to waste materials, contaminated soil, and groundwater.
4. LUC(s) Implemented to Achieve Objective(s): A landfill cover that complies with the landfill closure requirements of the Illinois Environmental Protection Agency (Illinois EPA) serves as a barrier against direct exposure to landfill waste, and reduces the infiltration of storm water within the landfill boundary.

**4a. *Property Use Restriction***

Site 3 does not pose a threat to human health or the environment under a light recreational use scenario. A landfill cap/barrier exists at Site 3, preventing exposure to waste material and impacted soil.

**4b. *Groundwater Use Restriction***

The installation of groundwater wells (other than environmental evaluation or monitoring wells) is prohibited to prevent exposure to contaminated groundwater at Site 3. In addition, the installation of groundwater wells (other than environmental evaluation or monitoring wells) is prohibited to all geographic areas of Naval Station Great Lakes by Naval Station Great Lakes Instruction 11130.1 (Ground Water Use Restrictions).

**4c. *Soil Disturbance Restriction***

The excavation and uncontrolled disturbance or removal of soil from Site 3 without prior review of work plans by the Navy and the Illinois EPA is prohibited. These reviews are necessary to ensure adequate worker health and safety precautions and to confirm proper management of contaminated materials and maintain the final remedy/landfill cap.

**4d. *Maintenance of Landfill Cover***

A landfill cover at the site prevents exposure to waste materials, contaminated soil, and infiltration of surface water. This cover will be inspected and maintained.



5. Decision Document: Remedial Action Completion Report for Supply Side Landfill (Site 3), Tetra Tech NUS, Inc., Naval Station Great Lakes, Great Lakes Illinois, April 2009.

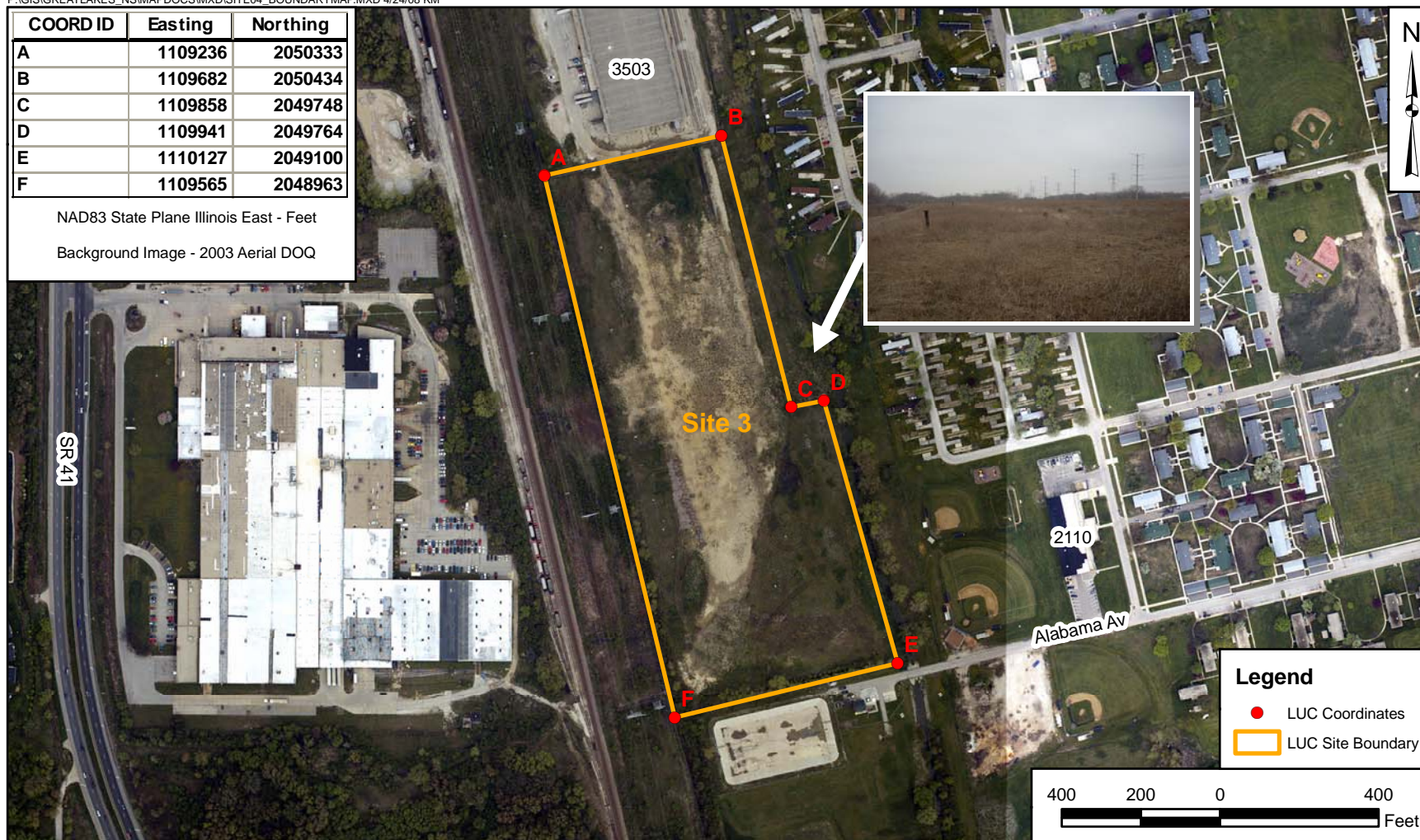
6. Other Pertinent Information: Additional closure activities were conducted at Supply Side Landfill between 2004 and 2007 to comply with the landfill closure requirements of the Illinois EPA. These activities included re-grading of the landfill, placement of additional fill for the landfill cover, installation of groundwater monitoring wells, and collection of groundwater samples.

7. LUCIP: As with all federal facilities, a Base Master Plan was developed to manage all construction activities based on current and future development of Naval Station Great Lakes. The Base Master Plan is included as part of the Regional Shore Information Program and is updated as changes are made. Site 3 will be included as part of this system, identifying it as an environmental area of concern. Prior to any construction activities or intrusive work at Site 3, design plans will be forwarded to the Naval Facilities Engineering Command (NAVFAC) Environmental Business Line Core for review, certification, and approval. Approval of construction activities will ensure that worker safety requirements of 29 CFR 1910 are met, proper management of any encountered contaminated material per Title 35 Ill. Administrative Code, Subtitle G: Waste Disposal, and re-establishment of institutional controls.

COORD ID	Easting	Northing
A	1109236	2050333
B	1109682	2050434
C	1109858	2049748
D	1109941	2049764
E	1110127	2049100
F	1109565	2048963

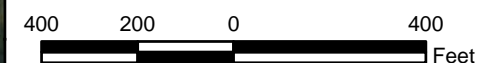
NAD83 State Plane Illinois East - Feet

Background Image - 2003 Aerial DOQ



#### Legend

- LUC Coordinates
- LUC Site Boundary



DRAWN BY K. MOORE	DATE 4/11/08
CHECKED BY J. WRIGHT	DATE 4/24/08
COST/SCHEDULE AREA	
SCALE AS NOTED	



SITE 3 - SUPPLISIDE LANDFILL  
NAVAL STATION GREAT LAKES  
GREAT LAKES, MICHIGAN

CONTRACT NUMBER  
CTO 0474

APPROVED BY  
G. POPE

DATE

APPROVED BY  
B. DAVIS

DATE

FIGURE NO.  
SITE 3

REV  
0

## **APPENDIX E**

### **GROUNDWATER TEST PARAMETERS**

## Appendix E

**ANALYTICAL PROGRAM  
LONG-TERM GROUNDWATER MONITORING  
SITE 3 – SUPPLYSIDE LANDFILL  
NAVAL STATION GREAT LAKES, GREAT LAKES, ILLINOIS  
PAGE 1 OF 2**

Parameter
<i>Groundwater L1</i>
RCRA Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Ag, An)
Lead
Cyanide
Oils
Total Dissolved Solids (TDS)
Ammonia (NH <sub>3</sub> )
Biological Oxygen Demand (BOD)
Phosphorus
Chromium +6
Fluoride
Phenols
Total Suspended Solids (TSS)
Fecal Coliform
Mercury
Chemical Oxygen Demand (COD)
<i>Groundwater L2</i>
Volatile Organic Compound (VOC)
Semi-volatile Organic Compound (SVOC) with Polynuclear Aromatic (PNA) Selected Ion Monitoring (SIM)
Herbicides
Chlorinated Pesticides
Polychlorinated Biphenyls (PCBs)
Pesticides, Nitrogen and Phosphorus
Carbamate Pesticides
Target Analyte List (TAL) Metals (23 analytes / TACO Limits)
Ammonia (NH <sub>3</sub> )
Fecal Coliform
Chemical Oxygen Demand (COD)
Chloride
Cyanide
Fluoride
Nitrate
Oil, Hexane Soluble

**Appendix E**

**ANALYTICAL PROGRAM  
LONG-TERM GROUNDWATER MONITORING  
SITE 3 – SUPPLYSIDE LANDFILL  
NAVAL STATION GREAT LAKES, GREAT LAKES, ILLINOIS  
PAGE 2 OF 2**

<b>Parameter</b>
Phenols
Phosphorus
Sulfate
Total Dissolved Solids (TDS)
Total Organic Content (TOC)
Total Suspended Solids (TSS)

## **APPENDIX F**

### **DAILY CONSTRUCTION REPORTS AND SURVEYS**

## DAILY PROJECT DIARY

One Honey Creek Corporate Center  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	P. Cloudy	P. Cloudy
Temperature	80 Deg	82 Deg
Wind	Calm	Calm
Humidity	Dry	Dry

REPORT NO.: 1  
DATE: 07/28/04  
DAY: Wednesday

PROJECT: Great Lakes Oversight And Ee/ca Supply

PROJECT NO.: 20030322

LOCATION: North Chicago, IL

CLIENT: NAVFAC

CONTRACTOR: Toltest

SUPERINTENDENT: Jeff Tinney

Field Staking By: \_\_\_\_\_

PROJECT MANAGER: Brian Schneider

Resident Project Representative: Paul Eserhut

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
Compass Environmental	6	9	Backhoe	1	9
			Trackhoes	2	9
			Bulldozer	1	9
			Plastic Pipe Welder	1	9
Toltest	1	8	Pickup Truck	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	7:00	12:00	12:30	4:00		11:15	5:30		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

On this date, G.A.S. arrived on site at 12:00 PM after spending 45 minutes getting a visitor's pass to get through security. A meeting of Paul Eserhut (G.A.S.), Jeff Tinney and Tim Boos (Toltest), Blayne Kirsch, Steve Nicols, and Mark Hoyer (Navy), and Brian Conrath (Illinois E.P.A.) began at 12:00 PM and ended at 12:30 PM. Topics of discussion included:

1. The bentonite seal – A new detail has not yet been approved. However, the concept has been approved by the state.
2. The methane pipes will match the slope of the top of the landfill.
3. The "panhandle" has been omitted.
4. The "acceptable zone" approach for soil testing has been omitted.
5. The conductivity test (D 2434) for the stone has been omitted.
6. Scarifying to facilitate bonding of clay lifts – No scarifying required, since sheepfoot roller imprints will suffice (no smooth drum rolling allowed).
7. Mark Hoyer will perform inspection of the methane collection system when G.A.S. is not on site.
8. Jeff Tinney said that they would get G.A.S. material cut sheets.

Compass had excavated four trenches in the N. ½ of the landfill for the methane collection system (trenches #1 – 4). Deeper holes were dug where the plans showed "boreholes" were to be located. The trench walls had collapsed in some locations due to unstable soils. Compass was also welding HDPE pipe together for the piping in the N. trench. They also placed some stone bedding in this trench.

The stone for use in the trenches as pipe bedding and backfill was visually inspected. The stone consisted of clean, smooth 1" – 3" diameter clear stone. A sample was also collected for particle size analysis testing (Sample #1).

Elevation shots were taken in boreholes where trenches had been excavated. The bottom elevations and observations are as follows:

B30 = 677.61: Water present, lots of trash present, stone in the hole, bubbles rising through water.

B29 = 679.02: Lots of trash present, water and stone in the hole, bubbles rising through water.

B28 = 681.34: Trash present, water and stone in the hole.

B27 = 682.99: Major cave-in, a little trash present.

B23 = 677.48: Cave-in, Some trash present.

B24 = 679.55: Some trash present, small cave-in.

B25 = No Reading: Major cave-in, lots of trash

7/29/04

Supply Side Landfill Project Diary.xls  
Daily Diary 7-28-04

B25 = No Reading: Major cave-in, lots of trash.  
B26 = 675.24: Water and trash present in bottom of hole.  
B19 = 676.20: Small cave-in, a little trash in hole.  
B20 = 679.04: Lots of trash present, Water present in bottom of hole.  
B21 = 675.95: Trash in bottom of hole, cave-in.  
B22 = 675.96: A little trash present.  
B15 = 681.48: Trash in bottom of hole, cave-in.  
B16 = 674.66: Trash and water in bottom of hole, lots of bubbles rising through water.  
B17 = 673.42: Water in bottom of hole, lots of bubbles rising through water, no trash present.  
B18 = 675.99: Water in bottom of hole, a few bubbles rising through water, no trash present.

Mike Vails from Compass was having problems removing caved-in soil from the bottom of the N. trench without knocking more in. He said that he wanted to get the trenches backfilled with stone as soon as possible after the methane collector pipes were installed due to the frequent cave-in problems. This will make scheduling inspections of the pipe system difficult due to uncertainties in the schedule.

The 6" HDPE methane collection pipe was inspected and was found to conform to the plan. The perforated HDPE pipe was labeled: HDPE 345464C – ASTM F-714 C3 AWWA --- C90699 --- 06 --- 04 --- 5AB --- PMAL588 011002 J-M 6" ----- IPS --- SDR 17 --- PC100. The E. 24' of the pipe was solid, and was labeled: HDPE 345464C – ASTM F-714 C3 AWWA --- C90699 --- 07 --- 07 --- 04 --- 5AB --- PMAL613 110040 --- JM --- 6" --- IPS --- SDR 17 --- PC100.

Four 13.7' long x 6" diameter solid plastic pipes (including an elbow and flange) had been assembled.

Four 9.5' long x 6" diameter solid plastic pipes (including an elbow and flange) had been assembled.

The elbows were labeled as being manufactured by Central, with the same labeling as the solid 6" HDPE pipe described above. In addition, they were labeled: 6910937 BF 90, 6, IPS, DR11, B1K, PE 3408, CEC,,, ASTM D2613/D3261, AWWA C906 (4/04, 37276), (1590 JS), (1704 DM).

The Flanges at the other ends were labeled: 6912105 FA, 6, IPS, DR11, BLK, PE3408, CEC,,, ASTM D2513/D3261, AWWA C906 (4/04, 34707), (DR0663)

The 6" metal blind flanges were labeled SER11, SF2, 160 PSI, and were stamped A536, GR65/45/12 JL.

The 8" diameter C.M.C.P.s were labeled: AASHTO M218, ASTM A929, 05 25 2002, HT D74464, M11943, Washington Steel, Zn 2 oz., 16, .964.

#### ATTACHMENTS:

#### RESIDENT PROJECT REPRESENTATIVE

- CHECK HDPE PIPE LABELS

- CAVE-INS

- E-MAIL DETAIL



## DAILY PROJECT DIARY

One Honey Creek Corporate Center  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	M. Cloudy	M. Cloudy
Temperature	75 Deg	75 Deg
Wind	Calm	Calm
Humidity	Sprinkles	Sprinkles

REPORT NO.: 1  
DATE: 07/30/04  
DAY: Friday

PROJECT: Great Lakes Oversight And Ee/ca Supply

PROJECT NO.: 20030322

LOCATION: North Chicago, IL

CLIENT: NAVFAC

CONTRACTOR: Toltest

SUPERINTENDENT: Jeff Tinney

Field Staking By: \_\_\_\_\_

PROJECT MANAGER: Brian Schneider

Resident Project Representative: Paul Eserhut

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
Compass Environmental	6	8	Backhoe	1	8
			Trackhoes	2	8
			Bulldozer	1	8
			Plastic Pipe Welder	1	8
Toltest	1	8	Pickup Truck	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	7:00	12:00	1:00	4:00		8:30	2:30	3:00	4:00

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

On this date, G.A.S. arrived on the base at 8:30, spent .5 hrs. getting through security, and arrived on site at 9:00. Paul Eserhut and Antonio Correa performed a topographic survey of the N. ½ of the Supply Side Landfill. The survey shots were taken in 50' increments over the top of the landfill and at the break points on the side slopes of the landfill. An area along the N. edge of the landfill at the driveway entrance was not surveyed since the grading in this area was not completed yet. As a part of the topographic survey, survey shots were taken on the methane collection system at each end of each pipe (the N. three pipes).

During the time of inspection, Compass Environmental completed the installation and backfilling of the second pipe from the N. end of the landfill. The E. ½ of this pipe was inspected prior to the completion of backfilling. They also installed the third pipe from the N. end of the landfill. The pipe welds were inspected with satisfactory results. One note of inspection was made of the pattern of perforations in the HDPE pipe. The hole pattern in some of the pipes followed a slight helical spiral pattern that resulted in some of the perforations encroaching into the top half of the pipe, which was supposed to be the solid side. Compass was told to do a better job in keeping the top of the pipes solid. Mike Vails from Compass said that due to the flaw in the manufacture of the pipe, it was difficult to get them installed perfectly, but that they would try to align them the best that they could.

The stone bedding and backfill consisted of 1" - 3" rounded clear washed stone. The pipe bedding and backfill consisted entirely of this stone, except for the E. 27.5' of the 2<sup>nd</sup> pipe and the E. 35' and the W. 26' of the 3<sup>rd</sup> pipe, which corresponded to the solid HDPE ends of the pipes, where the bedding and backfill consisted of sand. Plastic membrane was then placed over the stone backfill and the trench was backfilled with trench excavation spoils. The membrane covering the stone backfill consisted of: Solmax International 460, and had a tag reading: LSOL 60 HDPE 22.3 x 250 5575. The membrane roll was 5' wide.

Corrugated metal culvert pipes were also installed about 110' from the W. ends of both of the HDPE pipes.

Mike Vails said that someone would need to inspect the 4<sup>th</sup> pipe around 1:00 PM on Monday. He also said that their plan for placing the clay liner was to start excavating from the SE corner of the stockpile and work their way west. He also said that they needed to know by Tuesday afternoon or Wednesday morning if they had permission to begin placing the first lift over the N. ½ of the landfill.

Erosion control at the site was inspected today. The erosion control consisted of silt fence around the perimeter of the entire site. This silt fence was generally in good condition, except for a few isolated sections where the fencing was knocked down. However, this is not a problem at this point since presently there is a trench around the perimeter of the landfill just inside of the silt fence where the clay cap is to be toed-into the base of the slope. Mike Vails was told that once the trench gets filled up, they would need to repair the silt fence.

During the erosion control inspection, areas of leachate seepage out of the landfill side slopes were noted. One area was located 5' down slope (W.) of control point #181 (water and bubbles were coming out of the ground). Another area of water seepage was located

Supply Side Landfill Project Diary.xls

During the erosion control inspection, areas of excessive seepage out of the landfill side slopes were noted. One area was located 5' down slope (W.) of control point #181 (water and bubbles were coming out of the ground). Another area of water seepage was located about 30' E. of control point #136.

**ATTACHMENTS:** None

**RESIDENT PROJECT REPRESENTATIVE** \_\_\_\_\_

## DAILY PROJECT DIARY

One Honey Creek Corporate Center  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	M. Cloudy	P. Cloudy
Temperature	80 Deg	88 Deg
Wind	Calm	Calm
Humidity	Dry	Dry

REPORT NO.: 1  
DATE: 08/02/04  
DAY: Monday

PROJECT: Great Lakes Oversight And Ee/ca Supply

PROJECT NO.: 20030322

LOCATION: North Chicago, IL

CLIENT: NAVFAC

CONTRACTOR: Toltest

SUPERINTENDENT: Jeff Tinney

Field Staking By: \_\_\_\_\_

PROJECT MANAGER: Brian Schneider

Resident Project Representative: Paul Eserhut

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
Compass Environmental	6	8	Backhoe	1	8
			Trackhoes	2	8
			Bulldozer	1	8
			Plastic Pipe Welder	1	8
Toltest	1	8	Pickup Truck	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	7:00	12:00	1:00	4:00		12:30	1:30	2:00	3:30

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

On this date, G.A.S. arrived on the base at 12:30, spent .5 hrs. getting through security, and arrived on site at 1:00. A little after 1:00 Mark Hoyer arrived on site to discuss inspection of the methane collection system. He said that from what he had seen, Compass was doing an acceptable job. He said that he had also told Mike Vails from Compass to try to get the solid portion of the HDPE pipes at the top of the collection system, which was difficult due to the manufacturing flaw in maintaining a consistently straight perforated hole pattern in the pipe.

Mark said that he had also seen one of the leachate seepage areas. He said that Compass was supposed to place bentonite and clay over the seepage areas. Mike Vails was told to do this.

During the time of inspection, Compass Environmental completed the installation and backfilling of the fourth pipe from the N. end of the landfill. The pipe welds were inspected with satisfactory results. Elevation shots were taken at the ends of the pipe and at two locations between the pipe ends. The survey data consisted of the following:

W. end of the pipe: Elevation = 686.22

125' E. of W. end of pipe: Elevation = 682.00

197' E. of W. end of pipe: Elevation = 679.95

E. end of the pipe (287' E. of W. end of pipe = total length of pipe): Elevation = 677.12

This survey data indicates that the 4<sup>th</sup> methane collection pipe slopes an average of 3.2% from West to East.

The stone bedding and backfill consisted of 1" - 3" rounded clear washed stone. The pipe bedding and backfill consisted entirely of this stone, except for the E. 24' and the W. 41' of the 4th pipe, which corresponded to the solid HDPE ends of the pipes, where the bedding and backfill consisted of sand. HDPE membrane was then placed over the stone backfill and the trench was backfilled with trench excavation spoils.

A corrugated metal culvert pipe was also installed over the 4<sup>th</sup> methane collection pipe about 85' from the W. end of the HDPE pipe.

Mike Vails said that someone would need to perform density tests on the first lift beginning on Thursday. He said that they planned on cleaning up the site and preparing the subgrade for placement of the clay cap tomorrow, with clay placement starting on Wednesday.

**ATTACHMENTS:** None

**RESIDENT PROJECT REPRESENTATIVE** \_\_\_\_\_

## DAILY PROJECT DIARY

One Honey Creek Corporate Center  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	P. Cloudy	P. Cloudy
Temperature	70 Deg	75 Deg
Wind	Calm	Calm
Humidity	Dry	Dry

REPORT NO.: 1  
DATE: 08/06/04  
DAY: Friday

PROJECT: Great Lakes Oversight And Ee/ca Supply

PROJECT NO.: 20030322

LOCATION: North Chicago, IL

CLIENT: NAVFAC

CONTRACTOR: Toltest

SUPERINTENDENT: Jeff Tinney

Field Staking By: \_\_\_\_\_

PROJECT MANAGER: Brian Schneider

Resident Project Representative: Paul Eserhut

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
Compass Environmental	6	8	Backhoe	1	8
			Trackhoes	2	8
			Bulldozer	1	8
			Bentonite Mixer	1	8
Toltest	1	8	Pickup Truck	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	7:00	12:00	1:00	4:00		7:00	1:30	2:00	4:30

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

G.A.S. arrived on the base at 7:00, spent .5 hr. getting through security, and performed nuclear density tests on the 1<sup>st</sup> lift in the N. ½ of the Supply Side Landfill (all passed). The bentonite seals at the W. ends of the 3<sup>rd</sup> & 4<sup>th</sup> trenches were also inspected. No deficiencies in the seals were noted.

**ATTACHMENTS:** None

**RESIDENT PROJECT REPRESENTATIVE** \_\_\_\_\_



# GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.

## FIELD DENSITY TEST SUMMARY

Test Date: 8 - 6 - 04 Project No. 20030322.00 G.A.S. Technician: Paul Eserhut

Report No.: of Density Gage: Brand: Seaman Model No.: C200 Serial No:

Project Name: Great Lakes Naval Base - Supply Side Landfill

Project Location: North Chicago, IL

Architect/Engineer: Graef, Anhalt, Schloemer & Associates

General Contractor: Toltest

Earthwork Contractor: Compass Environmental

Proctor Method: XXX Standard X Modified												
Daily Test No.	Project Test No.	Density Test Location	Elev., feet	Mat'l Mark	Max. Proctor, pcf	Proctor, 1=Lab. 2=Est.	Field Density, pcf	Percent Compaction Req'd/Achvd	Water Content Percent	Material Descript* (1, 2, etc)	Test Depth, inches	Remarks (Use additional lines as required.)
1		NW1/4 of W.1/2	lift #1		120.2	1	114.6	90.0/95.3	16.2	#3	B.S.	CC=2770, AC=4564, BD=
		(From trenches 3 - 4)										133.1, MC=562.4, M=18.5
2		SW1/4 of W.1/2	lift #1		120.2	1	110.1	90.0/91.6	16.5	#3	B.S.	CC=2837, AC=4536, BD=
		(From trenches 3 - 4)										128.3, MC=553.3, M=18.21
3		Center of W.1/2	lift #1		120.2	1	110.7	90.0/ 92.1	14.2	#3	B.S.	CC=2837, AC=4483, BD=
		(From trenches 3 - 4)										126.5, MC=484.3, M=15.7
4		NE1/4 of W.1/2	lift #1		120.2	1	119.0	90.0/ 99.03	12.75	#3	B.S.	CC=2732, AC=4531, BD=
		(From trenches 3 - 4)										134.2, MC=468.6, M=15.17
5		SE1/4 of W.1/2	lift #1		120.2	1	121.1	90.0/ 100.7	13.7	#3	B.S.	CC=2644, AC=4482, BD=
		(From trenches 3 - 4)										137.7, MC=507.3, M=16.5
6		W.1/4 of E.1/2	lift #1		120.2	1	122.0	90.0/ 101.5	13.54	#3	B.S.	CC=2609, AC=4448, BD=
		(From trenches 3 - 4)										138.6, MC=506.5, M=16.53
7		N.1/4 of E.1/2	lift #1		120.2	1	123.8	90.0/ 103.0	12.81	#3	B.S.	CC=2607, AC=4474, BD=
		(From trenches 3 - 4)										139.6, MC=487.7, M=15.86
8		S.1/4 of E.1/2	lift #1		120.2	1	111.5	90.0/ 92.8	14.26	#3	B.S.	CC=2804, AC=4458, BD=
		(From trenches 3 - 4)										127.4, MC=489.2, M=15.91
9		E.1/4 of E.1/2	lift #1		120.2	1	116.8	90.0/ 97.18	14.07	#3	B.S.	CC=2739, AC=4515, BD=
		(From trenches 3 - 4)										133.2, MC=503.7, M=16.43
10		W.1/4 of W.1/2	lift #1		120.2	1	118.5	90.0/98.64	13.24	#3	B.S.	CC=2694, AC=4469, BD=
		(From trenches 2 - 3)										134.2, MC=483.1, M=15.69
11		S.1/4 of W.1/2	lift #1		120.2	1	119.9	90.0/99.77	13.66	#3	B.S.	CC=2641, AC=4437, BD=
		(From trenches 2 - 3)										136.3, MC=502.3, M=16.38
12		N.1/4 of W.1/2	lift #1		120.2	1	108.0	90.0/89.91	15.58	#3	B.S.	X CC=2879, AC=4505, BD=
		(From trenches 2 - 3)										124.9, MC=515.1, M=16.84
12R		N.1/4 of W.1/2	lift #1		120.2	1	118.1	90.0/98.3	14.74	#3	B.S.	CC=2688, AC=4496, BD=
		(From trenches 2 - 3)										135.5, MC=531.2, M=17.42

\*Material Descriptions Provide a detailed description of backfill material; report material descriptions above by number.

3. Silty clay, little sand, trace gravel, CL

Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.

# GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.

## FIELD DENSITY TEST SUMMARY

Test Date: 8 - 6 - 04 Project No. 20030322.00 G.A.S. Technician: Paul Eserhut

Report No.: of Density Gage: Brand: Seaman Model No.: C200 Serial No.:

Project Name: Great Lakes Naval Base - Supply Side Landfill

Project Location: North Chicago, IL

Architect/Engineer: Graef, Anhalt, Schloemer & Associates

General Contractor: Toltest

Earthwork Contractor: Compass Environmental

Proctor Method: XXX Standard X Modified

Daily Test No.	Project Test No.	Density Test Location	Elev., feet	Mat'l Mark	Max. Proctor, pcf	Proctor, 1=Lab. 2=Est.	Field Density, pcf	Percent Compaction Req'd/Achvd	Water Content Percent	Material Descript* (1, 2, etc)	Test Depth, inches	X**	Remarks (Use additional lines as required.)
13		E.1/4 of W.1/2	lift #1		120.2	1	117.6	90.0/97.91	13.06	#3	B.S.		CC=2697, AC=4441, BD=
		From trenches 2 - 3											133.0, MC=474.0, M=15.3
14		SW1/4 of E.1/2	lift #1		120.2	1	113.3	90/94.28	14.62	#3	B.S.		CC=2773, AC=4476, BD=
		From trenches 2 - 3											129.9, MC=507.5, M=16.5
15		Center of E.1/2	lift #1		120.2	1		90/98.83	12.54	#3	B.S.		CC=2717, AC=4491, BD=
		From trenches 2 - 3											133.7, MC=461.0, M=14.9
16		SE1/4 of E.1/2	lift #1		120.2	1		90/95.07	15.63	#3	B.S.		CC=2751, AC=4504, BD=
		From trenches 2 - 3											132.1, MC=543.5, M=17.8
17		NE1/4 of E.1/2	lift #1		120.2	1		90/97.56	12.68	#3	B.S.		CC=2749, AC=4500, BD=
		From trenches 2 - 3											132.1, MC=460.0, M=14.8
18		NW1/4 of E.1/2	lift #1		120.2	1		90/93.03	11.69	#3	B.S.		CC=2859, AC=4473, BD=
		From trenches 1 - 2											124.9, MC=410.1, M=13.0
19		W.1/4 of W.1/2	lift #1		120.2	1		90/94.37	14.47	#3	B.S.		CC=2760, AC=4453, BD=
		From trenches 1 - 2											129.8, MC=503.3, M=16.4
20		S.1/4 of W.1/2	lift #1		120.2	1		90/95.33	16.3	#3	B.S.		CC=2738, AC=4514, BD=
		From trenches 1 - 2											133.2, MC=566.2, M=18.6
21		N.1/4 of W.1/2	lift #1		120.2	1		90/97.17	14.07	#3	B.S.		CC=2708, AC=4464, BD=
		From trenches 1 - 2											133.2, MC=503.7, M=16.4
22		E.1/4 of W.1/2	lift #1		120.2	1		90/96.26	14.16	#3	B.S.		CC=2747, AC=4496, BD=
		From trenches 1 - 2											115.7, MC=502.4, M=16.3
23		W.1/4 of E.1/2	lift #1		120.2	1		90/94.04	14.85	#3	B.S.		CC=2774, AC=4475, BD=
		From trenches 1 - 2											129.8, MC=513.5, M=16.7
24		S.1/4 of E.1/2	lift #1		120.2	1		90/92.15	16.51	#3	B.S.		CC=2797, AC=4491, BD=
		From trenches 1 - 2											129.0, MC=555.3, M=18.2
25		E.1/4 of E.1/2	lift #1		120.2	1		90/91.16	16.74	#3	B.S.		CC=2832, AC=4514, BD=
		From trenches 1 - 2											127.9, MC=556.9, M=18.3

\*Material Descriptions Provide a detailed description of backfill material; report material descriptions above by number.

3. Silty clay, little sand, trace gravel, CL

Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.

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Project Location North Chicago, IL

Architect/Engineer: Graf, Anhalt, Schleimer & Associates

General Contractor	Toltrest
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Earthquake Centroid

[illegible][illegible]

2	Cliff: clay, little exposed	1	Cliff: clay, little exposed
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# GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.

## FIELD DENSITY TEST SUMMARY

Test Date: 8 - 9 - 04 Project No. 20030322.00 G.A.S. Technician: Paul Eserhut

Report No.: of Density Gage: Brand: Seaman Model No.: C200 Serial No:

Project Name ..... Great Lakes Naval Base - Supply Side Landfill

Project Location ..... North Chicago, IL

Architect/Engineer ..... Graef, Anhalt, Schloemer & Associates

General Contractor ..... Toltest

Earthwork Contractor ..... Compass Environmental

Proctor Method: XXX Standar X Modified

Daily Test No.	Project Test No.	Density Test Location	Elev., feet	Mat'l Mark	Max. Proctor, pcf	Proctor, 1=Lab. 2=Est.	Field Density, pcf	Percent Compaction Req'd/Achvd	Water Content Percent	Material Descript*	Test Depth, inches	Remarks (Use additional lines as required.)
1		E. 1/3	lift #1		120.2	1	119.7	90/99.64	12.01	3	BS	CC=2708, AC=4488, BD=
		(N. of trench #1)										134.1, MC=446.5, M=14.38
2		W. 1/3	lift #1		120.2	1	114.5	90/95.27	14.36	3	BS	CC=2793, AC=4538, BD=
		(N. of trench #1)										130.9, MC=504.0, M=16.42
3		NW 1/4 of W. 1/2	lift #2		120.2	1	118.4	90/98.57	15.05	3	BS	CC=2674, AC=4493, BD=
		(From trenches 3 - 4)										136.3, MC=542.8, M=17.82
4		SW 1/4 of W. 1/2	lift #2		120.2	1	118.5	90/98.62	14.75	3	BS	CC=2679, AC=4493, BD=
		(From trenches 3 - 4)										136.0, MC=533.0, M=17.48
5		Center of W. 1/2	lift #2		120.2	1	121.5	90/101.0	12.61	3	BS	CC=2662, AC=4488, BD=
		(From trenches 3 - 4)										136.8, MC=472.7, M=15.32
6		NE 1/4 of W. 1/2	lift #2		120.2	1	120.1	90/99.98	12.88	3	BS	CC=2702, AC=4521, BD=
		(From trenches 3 - 4)										135.6, MC=477.1, M=15.48
7		SE 1/4 of W. 1/2	lift #2		120.2	1	110.0	90/91.52	16.11	3	BS	CC=2863, AC=4559, BD=
		(From trenches 3 - 4)										127.7, MC=539.5, M=17.72
8		W. 1/4 of E. 1/2	lift #2		120.2	1	122.8	90/102.1	12.94	3	BS	CC=2639, AC=4501, BD=
		(From trenches 3 - 4)										138.7, MC=488.6, M=15.89
9		N. 1/4 of E. 1/2	lift #2		120.2	1	113.1	90/94.15	14.62	3	BS	CC=27.93, AC=4503, BD=
		(From trenches 3 - 4)										129.7, MC=506.8, M=16.52
10		S. 1/4 of E. 1/2	lift #2		120.2	1	119.1	90/99.14	12.36	3	BS	CC=2729, AC=4518, BD=
		(From trenches 3 - 4)										133.9, MC=456.3, M=14.73
11		E. 1/4 of E. 1/2	lift #2		120.2	1	117.8	90/98.04	13.31	3	BS	CC=2719, AC=4489, BD=
		(From trenches 3 - 4)										133.5, MC=482.9, M=15.69
12		W. 1/4 of W. 1/2	lift #2		120.2	1	110.6	90/92.03	15.73	3	BS	CC=2852, AC=4549, BD=
		(From trenches 2 - 3)										128.0, MC=530.6, M=17.4
13		S. 1/4 of W. 1/2	lift #2		120.2	1	116.8	90/97.19	14.77	3	BS	CC=2728, AC=4521, BD=
		(From trenches 2 - 3)										134.0, MC=526.6, M=17.25

\*Material Descriptions Provide a detailed description of backfill material; report material descriptions above by number.

3. Silty clay, little sand, trace gravel, CL

Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.

# GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.

## FIELD DENSITY TEST SUMMARY

Test Date: 8 - 9 - 04 Project No. 20030322.00 G.A.S. Technician: Paul Eserhut

Report No.: of Density Gage: Brand: Seaman Model No.: C200 Serial No:

Project Name: Great Lakes Naval Base - Supply Side Landfill

Project Location: North Chicago, IL

Architect/Engineer: Graef, Anhalt, Schloemer & Associates

General Contractor: Toltest

Earthwork Contractor: Compass Environmental

Proctor Method: XXX Standard X Modified

Daily Test No.	Project Test No.	Density Test Location	Elev., feet	Mat'l Mark	Max. Proctor, pcf	Proctor, 1=Lab. 2=Est.	Field Density, pcf	Percent Compaction Req'd/Achvd	Water Content Percent	Material Descript* (1, 2, etc)	Test Depth, inches	Remarks (Use additional lines as required.)
14		N. 1/4 of W. 1/2	lift #1		120.2	1	117.2	90/97.51	14.01	3	BS	CC=2726, AC=4505, BD=
		(From trenches 2 - 3)										133.6, MC=503.4, M=16.42
15		E. 1/4 of W. 1/2	lift #1		120.2	1	114.5	90/95.3	15.31	3	BS	CC=2769, AC=4531, BD=
		(From trenches 2 - 3)										132.1, MC=534.5, M=17.54
16		SW 1/4 of E. 1/2	lift #2		120.2	1	122.6	90/102.0	12.15	3	BS	CC=2651, AC=4490, BD=
		(From trenches 2 - 3)										137.6, MC=461.2, M=14.91
17		NW 1/4 of E. 1/2	lift #2		120.2	1	118.9	90/98.99	12.47	3	BS	CC=2700, AC=4467, BD=
		(From trenches 2 - 3)										133.8, MC=459.1, M=14.8
18		Center of E. 1/2	lift #2		120.2	1	118.2	90/98.36	14.27	3	BS	CC=2699, AC=4502, BD=
		(From trenches 2 - 3)										135.1, MC=515.9, M=16.87
19		SE 1/4 of E. 1/2	lift #2		120.2	1	113.5	90/94.5	14.57	3	BS	CC=2770, AC=4478, BD=
		(From trenches 2 - 3)										130.1, MC=507.1, M=16.56
20		NE 1/4 of E. 1/2	lift #2		120.2	1	115.6	90/96.22	13.26	3	BS	CC=2724, AC=4432, BD=
		(From trenches 2 - 3)										131.1, MC=476.5, M=15.46
21		E. 1/4 of E. 1/2	lift #2		120.2	1	125.5	90/104.4	11.35	3	BS	CC=2617, AC=4494, BD=
		(From trenches 1 - 2)										139.7, MC=442.8, M=14.25
22		S. 1/4 of E. 1/2	lift #2		120.2	1	119.8	90/99.73	14.49	3	BS	CC=2663, AC=4501, BD=
		(From trenches 1 - 2)										137.2, MC=529.9, M=17.37
23		N. 1/4 of E. 1/2	lift #2		120.2	1	122.3	90/101.8	13.03	3	BS	CC=2630, AC=4476, BD=
		(From trenches 1 - 2)										138.3, MC=490.2, M=15.95
24		W. 1/4 of E. 1/2	lift #2		120.2	1	121.8	90/101.3	13.11	3	BS	CC=2659, AC=4511, BD=
		(From trenches 1 - 2)										137.8, MC=491.1, M=15.98
25		SE 1/4 of W. 1/2	lift #2		120.2	1	115.6	90/96.17	11.66	3	BS	CC=2802, AC=4499, BD=
		(From trenches 1 - 2)										129.0, MC=421.5, M=13.48
26		NE 1/4 of W. 1/2	lift #2		120.2	1	118.4	90/98.51	12.41	3	BS	CC=2731, AC=4498, BD=
		(From trenches 1 - 2)										133.1, MC=455.2, M=14.69

\*Material Descriptions Provide a detailed description of backfill material; report material descriptions above by number.

3. Silty clay, little sand, trace gravel, CL

Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.

## FIELD DENSITY TEST SUMMARY

\*\*An "X" in this column indicates that a retest is recommended.



**GRAEF  
ANHALT  
SCHLOEMER**  
and Associates Inc.

ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

	AM	PM
Weather	CLDY	CLDY
Temperature	60's	60's
Wind	SW	SW
Humidity		

One Honey Creek Corporate Cent  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

REPORT NO.:  
DATE: 8-10-04  
DAY: TUES

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00

LOCATION: GLNB

CLIENT:

CONTRACTOR:

SUPERINTENDENT:

Field Staking By:

PROJECT MANAGER:

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE	1	8
OPERATOR	5	8	OFF-ROAD DUMP	2	8
			DOZER	1	8
			SHEEPSFOOT COMPACTOR	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0700			1630

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

PLACING 3RD LIFT ON NORTH HALF OF LANDFILL.  
MATERIAL CONSISTED OF MOSTLY BROWN SILTY CLAY WITH SOME  
GREY SILTY CLAY.  
SILT FENCE IN PLACE AROUND ENTIRE SITE.

ATTACHMENTS: FIELD DENSITY TEST SUMMARY

RESIDENT PROJECT REPRESENTATIVE Paul Stevens



# GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.

## FIELD DENSITY TEST SUMMARY

Test Date: **8 - 10 - 04** Project No.: **20030322.00** G.A.S. Technician: **HOWARD STEVENSON**  
**Paul Eserhut**

Report No.: \_\_\_\_\_ of \_\_\_\_\_ Density Gage: \_\_\_\_\_ Brand: Seaman Model No.: \_\_\_\_\_ Serial No.: **L163**

Project Name: **Great Lakes Naval Base - Supply Side Landfill**

Project Location: **North Chicago, IL**

Architect/Engineer: **Graef, Anhalt, Schloemer & Associates**

General Contractor: **TOLTEST, INC.**

Earthwork Contractor: **COMPASS ENVIRONMENTAL**

Proctor Method: **XXX** Standard Modified

Daily Test No.	Project Test No.	Density Test Location	Elev., feet	Mat'l Mark	Max. Proctor, pcf	Proctor, 1=Lab, 2=Est.	Field Density, pcf	Percent Compaction Req'd/Achvd	Water Content Percent	Material Descript* (1, 2, etc)	Test Depth, inches	Remarks (Use additional lines as required.)
1		W 1/3	41.2		120.2	1	118.7	90/98.79	16.55	3	BS	CC=2660, AC=4589, BD=138.9 MC=593.5, M=19.65
2		C 1/3					123.7	90/102.9	12.76			CC=2604, AC=4465, BD=139.5 MC=486.0, M=15.80
3		E 1/3					121.3	90/100.9	11.91			CC=2667, AC=4469, BD=135.8 MC=448.8, M=14.46
4		W 1/4 OF W 1/3	41.3		118.0	1	122.1	90/103.4	11.74	4		CC=2678, AC=4493, BD=136.4 MC=445.3, M=14.34
5		S 1/4 OF W 1/3					120.4	90/102.1	12.71			CC=2691, AC=4507, BD=135.8 MC=472.6, M=15.32
6		N 1/4 OF W 1/3					118.9	90/100.7	11.62			CC=2750, AC=4518, BD=132.7 MC=430.8, M=13.82
7		E 1/4 OF W 1/3					123.1	90/104.3	13.36			CC=2610, AC=4471, BD=131.6 MC=304.1, M=16.45
8		S 1/2 OF CENT 1/3					119.2	1/101.0	12.33			CC=2693, AC=4460, BD=134.0 MC=452.7, M=14.71
9		N 1/2 OF CTR 1/3					111.1	1/94.2	10.68			CC=2699, AC=4483, BD=128.1 MC=376.6, M=11.88
10		W 1/2 OF E 1/3					119.8	1/101.5	11.39			CC=2755, AC=4549, BD=135.1 MC=426.2, M=13.65
11		SW 1/4 OF E 1/3					123.4	1/104.6	11.35			CC=2625, AC=4440, BD=137.5 MC=436.2, M=14.61
12		NW 1/4 OF E 1/3					120.5	1/102.2	12.08			CC=2682, AC=4474, BD=135.1 MC=451.6, M=14.56
13		SW 1/3 OF W 1/2					118.6	1/100.5	13.73			CC=2703, AC=4502, BD=134.9 MC=499.7, M=16.29
14		NW 1/3 OF W 1/2					111.7	1/94.7	13.31			CC=2924, AC=4623, BD=126.6 MC=460.2, M=14.87
15		CTR 1/3 OF W 1/2					119.8	1/101.5	13.91			CC=2675, AC=4509, BD=136.4 MC=510.3, M=16.67
16		SE 1/3 OF W 1/2					123.9	1/105.0	13.48			CC=2612, AC=4510, BD=140.6 MC=511.1, M=16.70
17		NE 1/3 OF W 1/2					110.3	1/93.5	16.54			CC=2828, AC=4523, BD=128.5 MC=554.3, M=18.25
18		W 1/3 OF E 1/2					114.6	1/97.1	14.43			CC=2743, AC=4464, BD=131.1 MC=506.9, M=16.55
19		N 1/2 OF CTR 1/3 OF E 1/2					117.3	1/99.5	11.39			CC=2747, AC=4458, BD=130.7 MC=418.3, M=13.37
20		S 1/2 OF CTR 1/3 OF E 1/2					115.4	1/97.8	14.41			CC=2752, AC=4503, BD=132.1 MC=509.5, M=16.64
21		E 1/3 OF E 1/3					117.3	1/99.5	13.47			CC=2738, AC=4512, BD=133.1, MC=486.4, M=15.51
								/				
								/				
								/				
								/				
								/				
								/				

\*Material Descriptions Provide a detailed description of backfill material; report material descriptions above by number.

1.	
2.	
Note: Elev. 0.00 equals existing pavement elevation	

\*\*An "X" in this column indicates that a retest is recommended.

**GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.**

## FIELD DENSITY TEST SUMMARY

Test Date: 8 - 11 - 04 Project No. 20030322:00 G.A.S. Technician:

HOWARD STEVENSON  
Paul Eserhut

Report No.: \_\_\_\_\_ of \_\_\_\_\_ Density Gage: Brand: Seaman Model No.: \_\_\_\_\_ Serial No: L 168

Project Name ..... Great Lakes Naval Base - Supply Side Landfill

*Project Location* . . . . . North Chicago, IL

Architect/Engineer..... Graef, Anhalt, Schloemer &amp; Associates

General Contractor.....TOLTEST

Earthwork Contractor..... COMPASS ENVIRONMENTAL

Proctor Method: ☒ Standard ☐ Modified[illegible]

\*Material Descriptions

Provide a detailed description of backfill material; report material descriptions above by number.

Material Descriptions		Provide a detailed description of backfill material; report material descriptions above by number.	
1.			
2.			
	Note: Elev. 0.00 equals existing pavement elevation		

\*\*An "X" in this column indicates that a retest is recommended.



**GRAEF  
ANHALT  
SCHLOEMER**  
and Associates Inc.

ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

	AM	PM
Weather	CLDY	CLDY
Temperature	50's	60's
Wind	N	N
Humidity		

One Honey Creek Corporate Cent  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

REPORT NO.:  
DATE: 8-12-04  
DAY: THURS

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: GLNB  
CLIENT: \_\_\_\_\_  
CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_  
Field Staking By: \_\_\_\_\_ PROJECT MANAGER: \_\_\_\_\_  
Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE	1	8
OPERATOR	1	8	OFF-ROAD DUMP TRUCK	2	8
			DOZER	1	8
			SHEEPSFOOT COMPACTOR	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1400		0700			1400

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS ENVIRONMENTAL STARTED PLACING CLAY ON THE WEST SIDE  
SIDE SLOPE.

BROWN & GREY CLAY MIXED WITH SOME GRAVEL.

I INSPECTED SILT FENCE & FOUND TWO AREAS WHERE THE SILT FENCE  
NEEDS TO BE BURIED, 1@ THE SOUTH END & 1 ABOUT HALFWAY  
ALONG THE EAST SIDE. I TOLD MIKE VAILS.

ATTACHMENTS: DENSITY SHEET

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson





**GRAEF  
ANHALT  
SCHLOEMER**  
and Associates Inc.

ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

	AM	PM
Weather	CLDY	
Temperature	50°	
Wind		
Humidity		

One Honey Creek Corporate Cent  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

REPORT NO.:

DATE: 8-13-04

DAY: FRI

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00

LOCATION: GLNB

CLIENT:

CONTRACTOR: TOLTEST

SUPERINTENDENT:

Field Staking By:

PROJECT MANAGER:

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	3 1/2	BACK HOE	1	8
OPERATOR	4	8	OFF-ROAD DUMP TRUCK	2	8
OPERATOR	1	3 1/2	DOZER	1	8
			SHEEPSFOOT COMPACTOR	1	3 1/2

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0700	1030		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS ENVIRONMENTAL PLACED 3RD LIFT ON WEST SIDE SIDE  
SLOPE, FINE GRADED SITE.

MATERIAL CONSISTED OF BROWN & GREY SILTY CLAY  
WITH SOME GRAVEL.

ATTACHMENTS: DENSITY SHEET

RESIDENT PROJECT REPRESENTATIVE

*Howard Stevenson*

\*\*An "X" in this column indicates that a retest is recommended.

## DAILY PROJECT DIARY

One Honey Creek Corporate Center  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather		PC
Temperature		80's
Wind		SW
Humidity		

**REPORT NO.:**

DATE: 9-14-04

DAY: TUES

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00

LOCATION: GREAT LAKES

CLIENT: NAVY

**CONTRACTOR:** TOLTEST

**SUPERINTENDENT:**

Field Staking By: \_\_\_\_\_

**PROJECT MANAGER:** BRIAN SCHNEIDER

Resident Project Representative: HOWARD STEVENSON

[illegible]

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
						1230	1600		

**Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts**

EXCAVATED) FOR GAS COLLECTION LINE CT-1

PERF PIPE J-M 6" IPS SDR 17 PC100-HDPE 345464C-ASTM F-714

C3 AWWA C90699 6-15-04 SBA PMAL588 011002

NONPERF PIPE J-M 6" IPS SDR17 PC100 HDPE 345464C-ASTM F-714

C3 AWWA C90699 07-07-04 SAB PMAG13 110040

STONE CA3 2" ROOFING STONE FROM THELEN

1'-2" CLEAR WASHED STONE

WALL COLLECTION PIPE CT-1. I CHECKED SLOPE.

IT IS -2.87% TO THE EAST

ATTACHMENTS: NONE

**RESIDENT PROJECT REPRESENTATIVE**

## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	PC	CLDY
Temperature	71	80S
Wind	SW	SW
Humidity		MSD

REPORT NO.:  
DATE: 9-15-04  
DAY: WEDS

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.  
CLIENT: NAVY  
CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_  
Field Staking By: \_\_\_\_\_ PROJECT MANAGER: BRIAN SCHNEIDER  
Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE CAT 315C	1	8
OPERATOR	5	8	TRACTOR B'HOE CAT 416 C	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	<del>1200</del>	1600		0630	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS CONTINUED INSTALLING GAS COLLECTION SYSTEM  
PLACED GOMIL LINER (SOLMAX INTERNATIONAL 460) ON TOP OF  
STONE AND BACKFILLED LINE CT-1

BRIAN SCHNEIDER VISITED SITE. HE WOULD LIKE DEPTHS TO TOP  
OF GARBAGE AND BOTTOM OF PIPE FROM SUBGRADE.

EXCAVATED AND PLACED STONE FOR LINE CT-2.

DEPTHS BELOW SUBGRADE

	TOP OF GARBAGE	BOT OF PIPE
B89		7.5
B78	6.0	8.0
B67	8.3 (WATER)	7.5
B56	13.0	7.5
B5	10.5	8.0

ATTACHMENTS: NONE



## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	CLR	CLR
Temperature	69	70.6
Wind	N	N
Humidity	LOW	LOW

REPORT NO.:  
DATE: 9-16-04  
DAY: THURS

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030323.00 LOCATION: G.L.N.B.  
CLIENT: NAVY  
CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_  
Field Staking By: \_\_\_\_\_ PROJECT MANAGER: BRIAN SCHNEIDER  
Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1		BACKHOE CAT 315C	1	
OPERATOR	5		TRACTOR BACKHOE CAT 416C	1	
			DOZER CAT D6M	1	

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0700	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

PLACED COMPASS PLACED GAS COLLECTION LINE CT-2  
SITE MUDDY FROM LAST NITES RAIN.  
PLACED 8" CMP CASING PIPE 100' FROM T-2. SLOPE -3.1% TO EAST  
STARTED DIGGING FOR LINE CT-3.  
FOUND EXIST RAILROAD TRACKS 7' BELOW SUBGRADE APPROX 190'  
WEST OF C-3

STARTED SHAPING BANKS. MIKE VAILS WOULD LIKE THE  
SUBGRADE SURVEY DONE ON TUES. OF NEXT WEEK. HE ANTICIPATES  
CLAY CAP PLACEMENT BEGINNING TUES PM AND CONTINUING  
2-3 WEEKS.

ATTACHMENTS: NONE

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson

## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	CLR	CLR
Temperature	61	80s
Wind		
Humidity	LOW	

REPORT NO.:  
DATE: 9-17-04  
DAY: FRI

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.  
CLIENT: NAVY  
CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_  
Field Staking By: \_\_\_\_\_ PROJECT MANAGER: BRIAN SCHNEIDER  
Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE CAT 315C	1	8
OPERATOR	5	8	TRACTOR BACKHOE CAT 415C	1	8
			DOZER CAT D6M	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0700	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS CONTINUES TO DIG TRENCH CT-3  
LAID LINE CT-3 SLOPE-3.1% TO THE EAST,  
CONTINUED SHAPING BANKS.

ATTACHMENTS: NONE

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson



**GRAEF  
ANHALT  
SCHLOEMER**  
and Associates Inc.  
ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	CLR	CLR
Temperature	60	80
Wind		
Humidity		

REPORT NO.:  
DATE: 9-20-04  
DAY: mon

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.  
CLIENT: NAVY  
CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_  
Field Staking By: \_\_\_\_\_ PROJECT MANAGER: BRIAN SCHNEIDER  
Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE CAT 330B	1	8
OPERATOR	5	8	OFF-ROAD DUMPTRK CAT 740	1	8
			DOZER CAT D6M	1	8
			WATER TRUCK CAT 613C	1	8
			TRACTOR BACKHOE CAT 415C	1	8
			GROUT PUMP	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0700	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS CONTINUED TO SHAPE BANKS & STARTED  
SHAPING TOP AT TRENCH LOCATIONS.

INSTALLED BENTONITE SLURRY SEALS AT PIPE ENDS.

ATTACHMENTS: PIPE DEPTH SHEET

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson



**GRAEF  
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SCHLOEMER**  
and Associates Inc.  
ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	CLR	CLR
Temperature	60	81
Wind	SE	SE
Humidity		

REPORT NO.:

DATE: 9-22-04

DAY: WEDS

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.

CLIENT: NAVY

CONTRACTOR: TOLTEST

SUPERINTENDENT: \_\_\_\_\_

Field Staking By: \_\_\_\_\_

PROJECT MANAGER: BRIAN SCHWEIDER

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
OPERATOR	5	8	BACKHOE CAT 330B	1	8
			DOZER CAT D6M	1	8
			OFF-ROAD DUMPTRUCK CAT 740	2	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0630	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

DAVE HAYES & I CROSS SECTIONED SUB GRADE ON SOUTH  
PORTION.

COMPASS BEGAN PLACING 1<sup>ST</sup> LIFT OF CLAY ON WEST  
SLOPE

ATTACHMENTS: NONE

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson





**GRAEF  
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and Associates Inc.  
ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

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Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	CLR	CLR
Temperature	68	84
Wind	SE	SE
Humidity	MOD.	LOW

REPORT NO.:

DATE: 9-23-04

DAY: THURS

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00

LOCATION: G.L.N.B.

CLIENT: NAVY

CONTRACTOR: TOLTEST

SUPERINTENDENT: \_\_\_\_\_

Field Staking By: \_\_\_\_\_

PROJECT MANAGER: BRIAN SCHNEIDER

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
OPERATOR	5	8	BACKHOE CAT 330	1	8
			DOZER CAT D6	1	8
			OFF-ROAD DUMP CAT 740	2	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0700	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS CONTINUES TO PLACE 1<sup>ST</sup> LIFT OF CLAY ON SOUTH & EAST SLOPES. STARTED 2<sup>ND</sup> LIFT ON WEST SLOPE.

I STARTED TAKING DENSITY TESTS ON CLAY TODAY

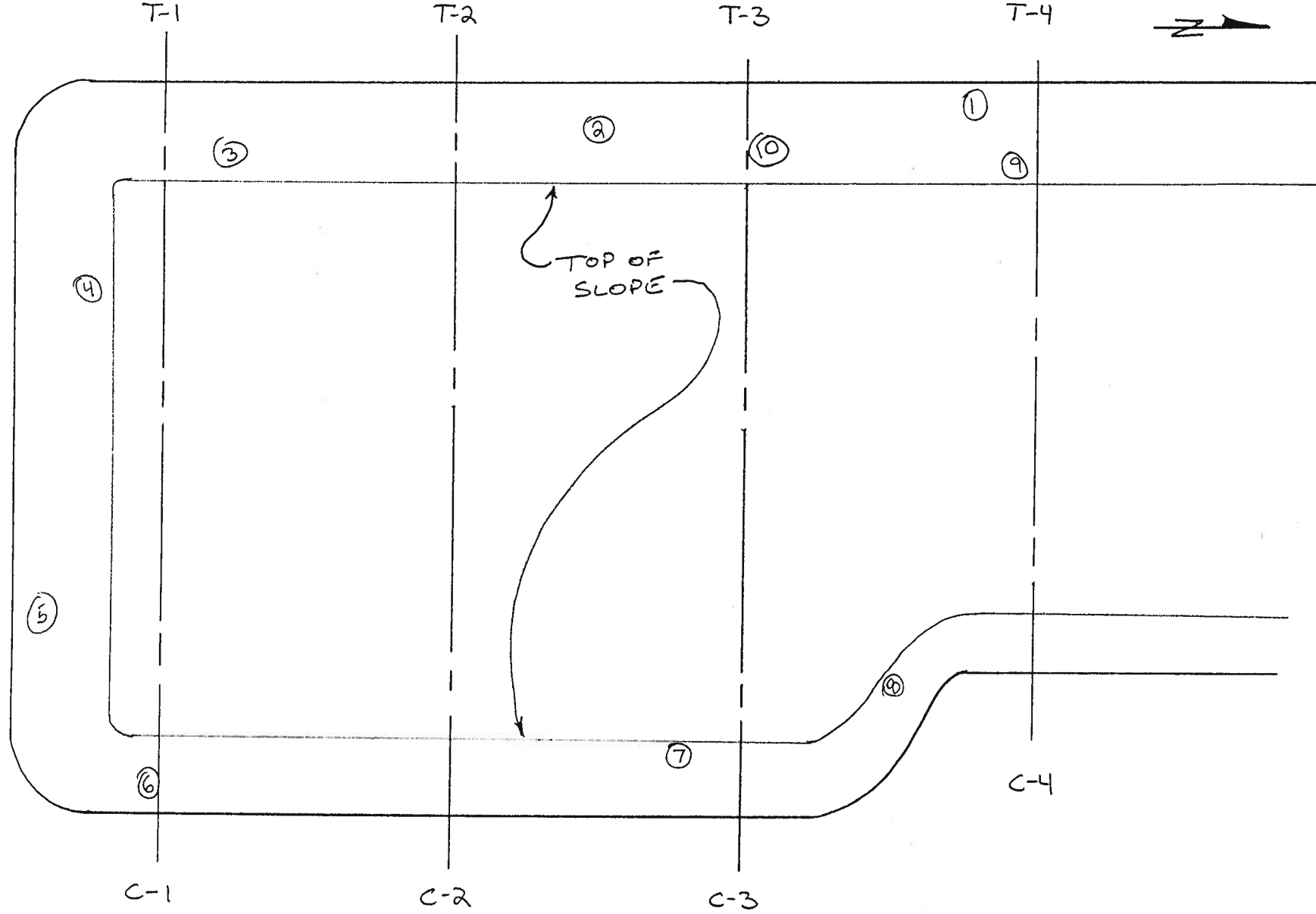
CAP MATERIAL IS A BROWN SILTY CLAY WITH SMALL AMOUNTS OF STONE AND GRAVEL.

ATTACHMENTS: DENSITY TEST SHEETS

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson





## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	PL	CLR
Temperature	65	83
Wind	W	W
Humidity		

REPORT NO.:  
DATE: 9-24-04  
DAY: FRI

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.  
CLIENT: NAVY  
CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_  
Field Staking By: \_\_\_\_\_ PROJECT MANAGER: BRIAN SCHNEIDER  
Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
OPERATOR	5	8	BACKHOE CAT 330	1	8
FOREMAN	1	2	DOZER CAT DG	1	8
			OFF ROAD DUMP CAT 740	2	8
			WATER TRUCK CAT 613	1	2

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0630	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

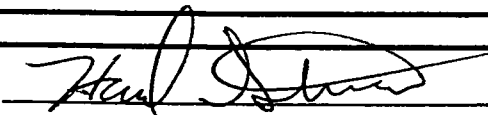
COMPASS CONTINUED TO PLACE 2<sup>ND</sup> LIFT OF CLAY ON  
SOUTH & EAST SLOPES

MATERIAL IS A BROWN SILTY CLAY WITH SOME GRAVEL.

AN ON-SITE MEETING WAS HELD TODAY. IN ATTENDANCE WERE  
JEFF & TIM FROM TOLTEST, MIKE FROM COMPASS, BLAYNE & MARK FROM  
NAVFAC, MYSELF AND SOMEONE FROM LAKE COUNTY. THE MEETING  
WAS JUST TO SEE HOW THINGS ARE GOING. THE ONLY CONCERNS  
WERE THE SHORTAGE OF CLAY CAP MATERIAL AND DUST CONTROL.  
JEFF THINKS THEY ARE 3000-4000 CY SHORT, BUT HE CAN GET  
CLAY WHEN HE NEEDS IT.

ATTACHMENTS: DENSITY TEST SHEETS

RESIDENT PROJECT REPRESENTATIVE





**GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.**

## FIELD DENSITY TEST SUMMARY

Test Date: 9-24-04 Project No.: 20030322.00 G.A.S. Technician: Howard Stevenson

Report No.: [REDACTED] of [REDACTED] Density Gage: Brand: Seaman Model No.: C-200 Serial No: L-168

Project Name ..... Great Lakes Naval Base - Supply Side Landfill

**Project Location** ..... **Great Lakes Naval Base**

Architect/Engineer . . . . . Graef, Anhalt, Schloemer & Associates

General Contractor..... Toltest

**Earthwork Contractor . . . . . Compass Environmental**

[illegible]

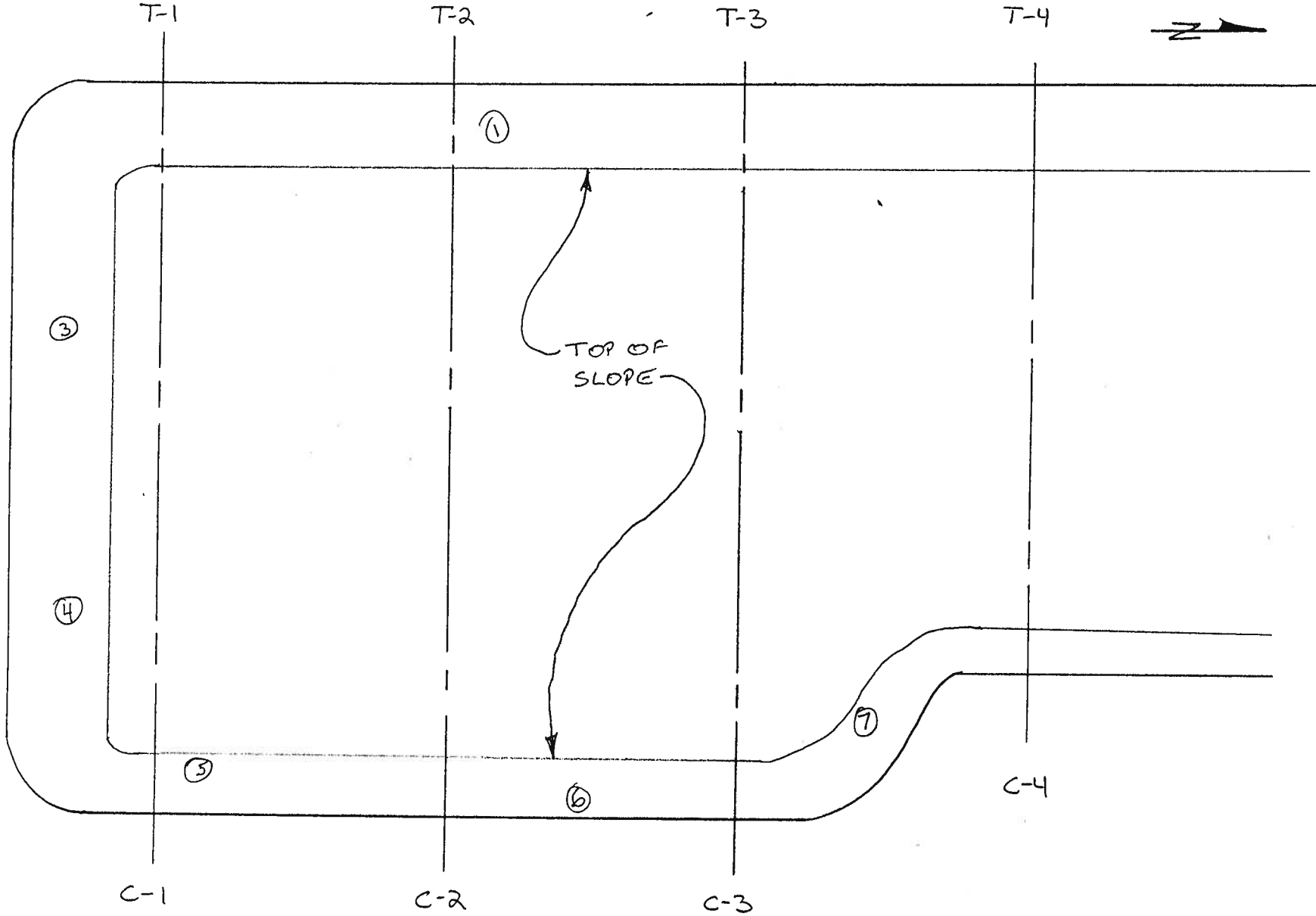
### \*Material Descriptions

Provide a detailed description of backfill material; report material descriptions above by number.

1.	
2.	

Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.





**GRAEF  
ANHALT  
SCHLOEMER**  
and Associates Inc.  
ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

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Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	CLR	CLR
Temperature	50's	70's
Wind	W	W
Humidity		

REPORT NO.:

DATE: 9-27-04

DAY: MON

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00

LOCATION: G.L.N.B.

CLIENT: NAVY

CONTRACTOR: TOLTEST

SUPERINTENDENT:

Field Staking By:

PROJECT MANAGER: BRIAN SCHNEIDER

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
OPERATOR	5	8	BACKHOE CAT 320	1	8
FOREMAN	1	4	DOZER CAT D6	1	8
			OFF ROAD DUMP TRK CAT 740	2	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0630	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS PLACED 3RD LIFT ON WEST SLOPE, SOUTH SLOPE &  
STARTED 3RD LIFT ON THE EAST SLOPE

MATERIAL CONTINUES TO BE A BROWN CLAY WITH  
SOME GRAVEL.

ATTACHMENTS: DENSITY TEST SHEETS

RESIDENT PROJECT REPRESENTATIVE

*Howard Stevenson*

**GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.**

## FIELD DENSITY TEST SUMMARY

Test Date: 9-27-04 Project No.: 20030322.00 G.A.S. Technician: Howard Stevenson

Report No.: [REDACTED] of [REDACTED] Density Gage: Brand: Seaman Model No.: C-200 Serial No.: L-168

Project Name ..... Great Lakes Naval Base - Supply Side Landfill

**Project Location** ..... **Great Lakes Naval Base**

Architect/Engineer.....Graef, Anhalt, Schloemer & Associates

**General Contractor . . . . . Toltest**

**Earthwork Contractor . . . . . Compass Environmental**

Proctor Method: ☒ Standard

Modified

[illegible]

### \*Material Descriptions

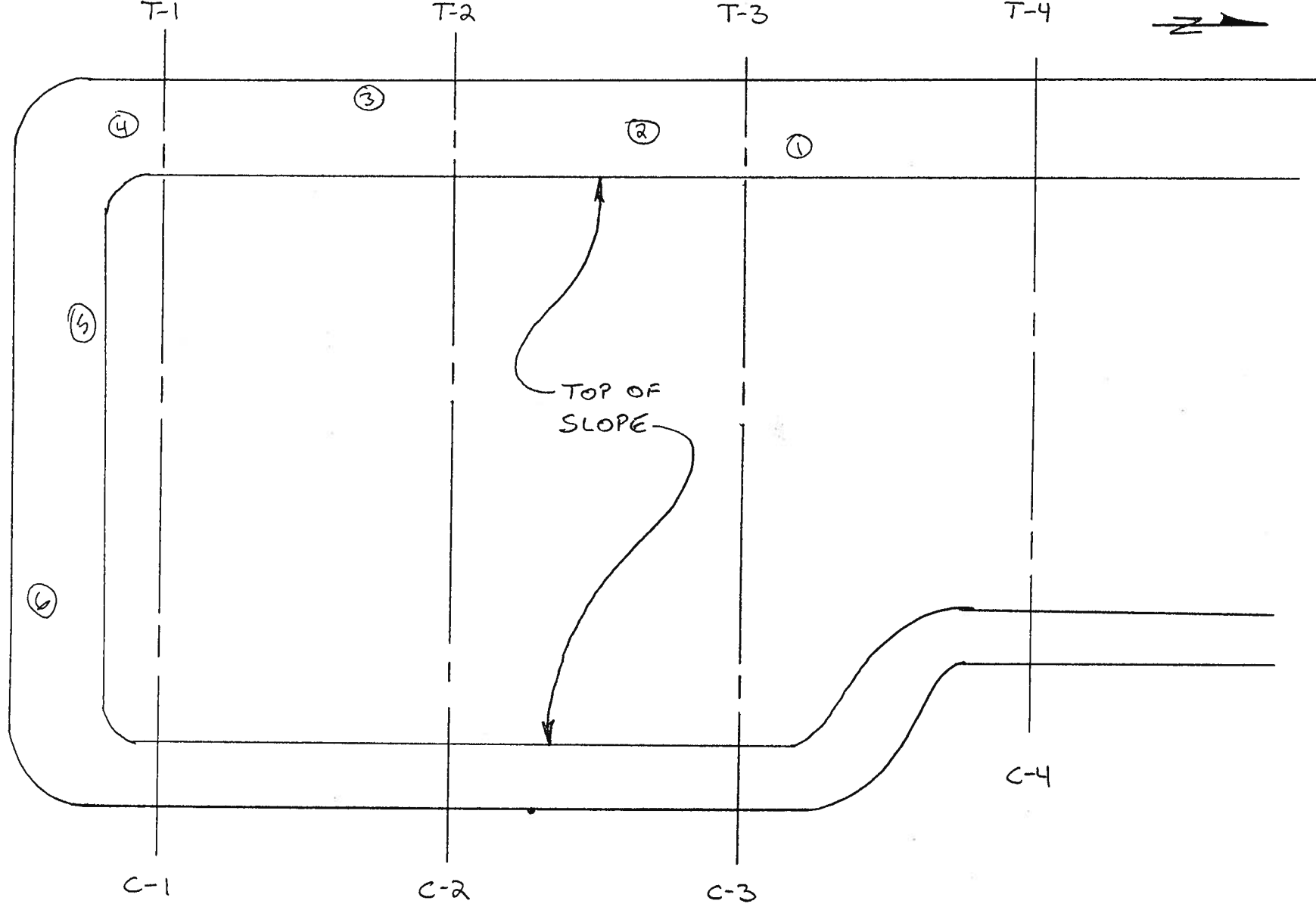
Provide a detailed description of backfill material; report material descriptions above by number.

1.	
2.	

Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.





## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
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FAX (414) 259-0037

	AM	PM
Weather	CLDY	PC
Temperature	50's	60's
Wind	N	N
Humidity		

REPORT NO.:

DATE: 9-28-04

DAY: TUES

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00

LOCATION: G.L.N.B.

CLIENT: NAVY

CONTRACTOR: TOLTEST

SUPERINTENDENT: \_\_\_\_\_

Field Staking By: \_\_\_\_\_

PROJECT MANAGER: BRIAN SCHNEIDER

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE CAT 330	1	8
OPERATOR	4	8	DOZER CAT D6	1	8
SUPERINTENDENT	1	8	OFF ROAD DUMP TRK CAT 740	1	8
			SHEEPSFOOT ROLLER	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0700	1600		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS FINISHED 3<sup>RD</sup> LIFT ON EAST SLOPE. STARTED 1<sup>ST</sup> LIFT ON THE SOUTH HALF OF LANDFILL. PLACED CAP TO APPROX TC-2 LINE.

BROWN CLAY WITH SOME GRAVEL

ATTACHMENTS: DENSITY TEST SHEET

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson

$$\frac{P}{C}$$

6

1

rk

onal

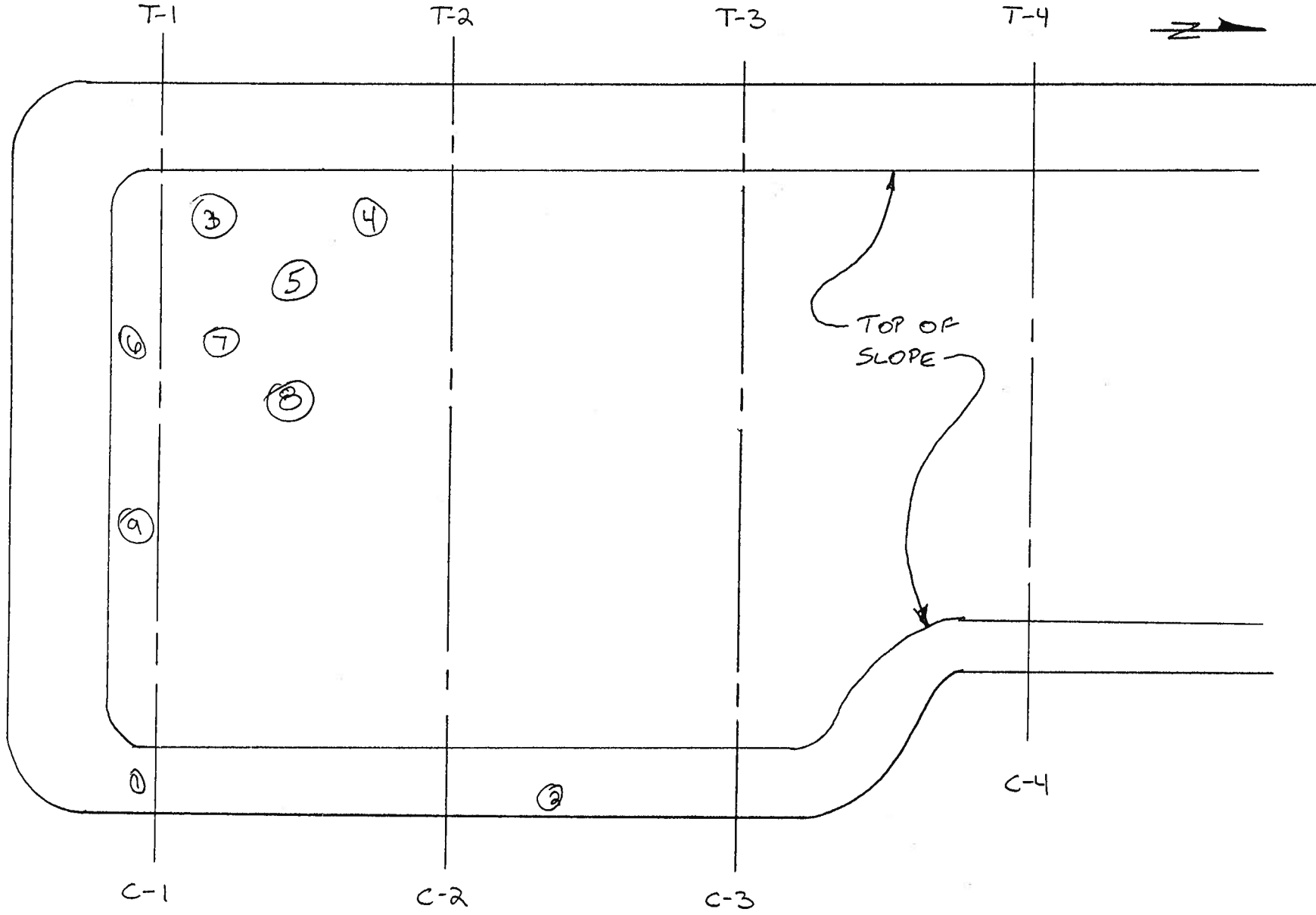
**ired**

45  
n = 1  
1535

$$\begin{array}{r} 17 \\ \times 45 \\ \hline \end{array}$$

455  
12

$$\begin{array}{r} 452 \\ \times 15 \\ \hline \end{array}$$
$$\begin{array}{r} 1490 \\ 211 \\ \hline 1511 \end{array}$$
$$\begin{array}{r} 18 \\ 453 \end{array}$$



## DAILY PROJECT DIARY

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Milwaukee, WI 53214 - 1470  
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FAX (414) 259-0037

	AM	PM
Weather	CLDY	
Temperature	50°	
Wind		
Humidity		

**REPORT NO.:**

DATE: 9-29-04

DAY: WEDS

PROJECT: GREAT LAKES NAVAL BASE-SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.

CLIENT: NAVY

CONTRACTOR: TALTEST

**SUPERINTENDENT:**

**Field Staking By:**

**PROJECT MANAGER:** BRIAN SCHNEIDER

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE CAT 330	1	8
OPERATOR	5	8	DOZER CAT D6	1	8
SUPERINTENDANT	1	8	SHEEPSFOOT ROLLER	1	8
			OFF ROAD DUMP TRK CAT 740	2	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0630	1600		

**Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts**

COMPASS CONTINUES TO PLACE 1<sup>ST</sup> LIFT ON SOUTH HALF  
OF LANDBILL.

BROWN SILTY CLAY WITH SOME GRAVEL

BLAYNE & STEVE (NAVFAC) & BRIAN (IEPA) VISITED SITE.  
NO PROBLEMS NOTED.

**ATTACHMENTS:** DENSITY SHEETS

**RESIDENT PROJECT REPRESENTATIVE**



**GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.**

### FIELD DENSITY TEST SUMMARY

Test Date: 9 - 29 - 04 Project No.: 20030322.00 G.A.S. Technician: Howard Stevenson

Report No.: [REDACTED] of [REDACTED] Density Gage: Brand: Seaman Model No.: C-200 Serial No.: L-168

Project Name ..... Great Lakes Naval Base - Supply Side Landfill

**Project Location** ..... **Great Lakes Naval Base**

Architect/Engineer..... Graef, Anhalt, Schloemer & Associates

General Contractor..... Toltest

**Earthwork Contractor** ..... **Compass Environmental**

Proctor Method: **XXX** Standard

**Modified**

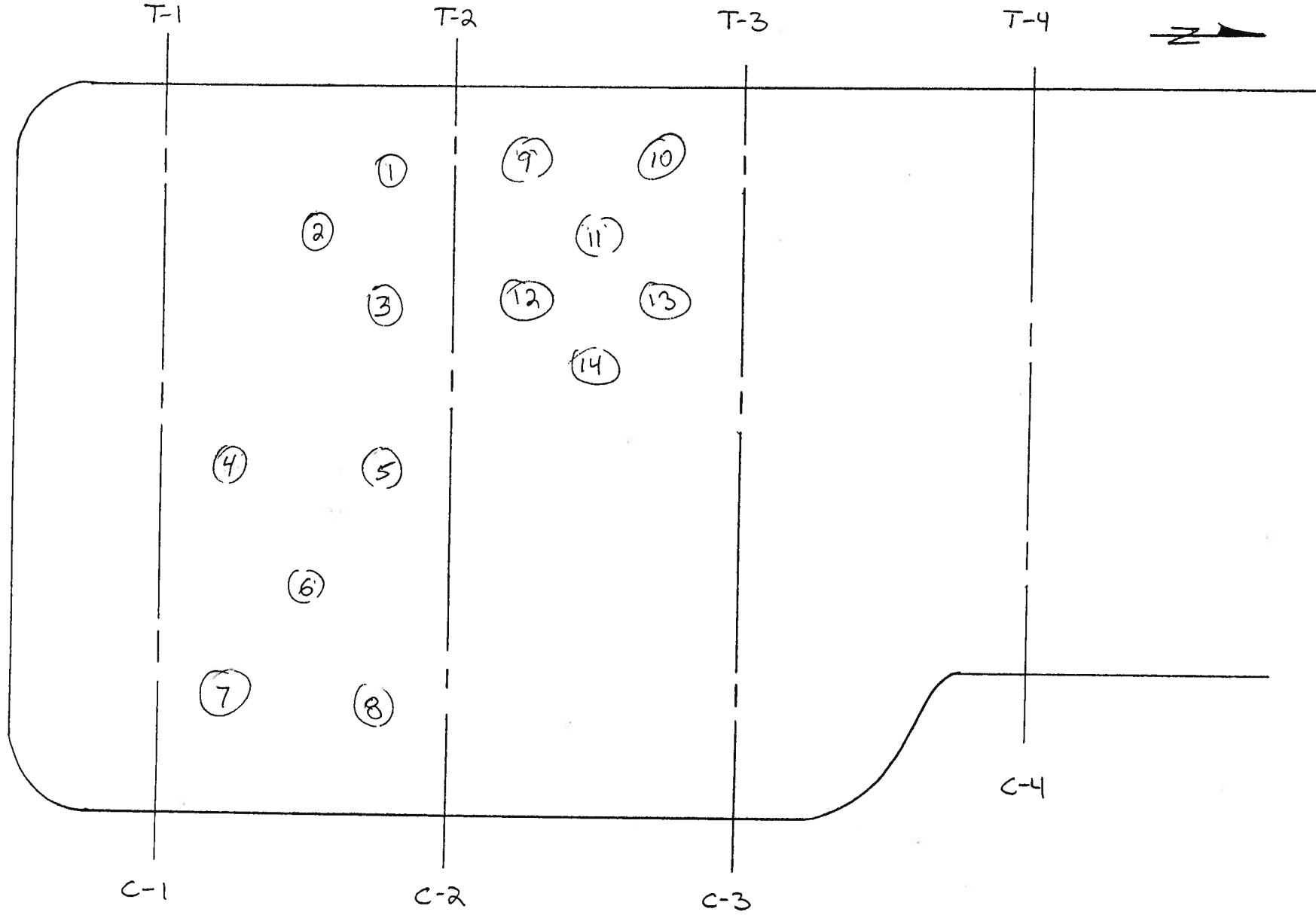
[illegible]

**\*Material Descriptions**

Provide a detailed description of backfill material; report material descriptions above by number.

1.	
2.	
	Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.





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	AM	PM
Weather	CLR	CLR
Temperature	50	70
Wind		
Humidity		

DAY: THURS

**Resident Project Representative:** HOWARD STEVENSON

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

**RESIDENT PROJECT REPRESENTATIVE**

**GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.**

## FIELD DENSITY TEST SUMMARY

Test Date: 9-30-04 Project No.: 20030322.00 G.A.S. Technician: Howard Stevenson

Report No.: [REDACTED] of [REDACTED] Density Gage: Brand: Seaman Model No.: C-200 Serial No.: L-168

Project Name ..... Great Lakes Naval Base - Supply Side Landfill

**Project Location** . . . . . Great Lakes Naval Base

Architect/Engineer ..... Graef, Anhalt, Schloemer & Associates

General Contractor..... Toltest

**Earthwork Contractor..... Compass Environmental**

Proctor Method: **XXX** Standard

**Modified**

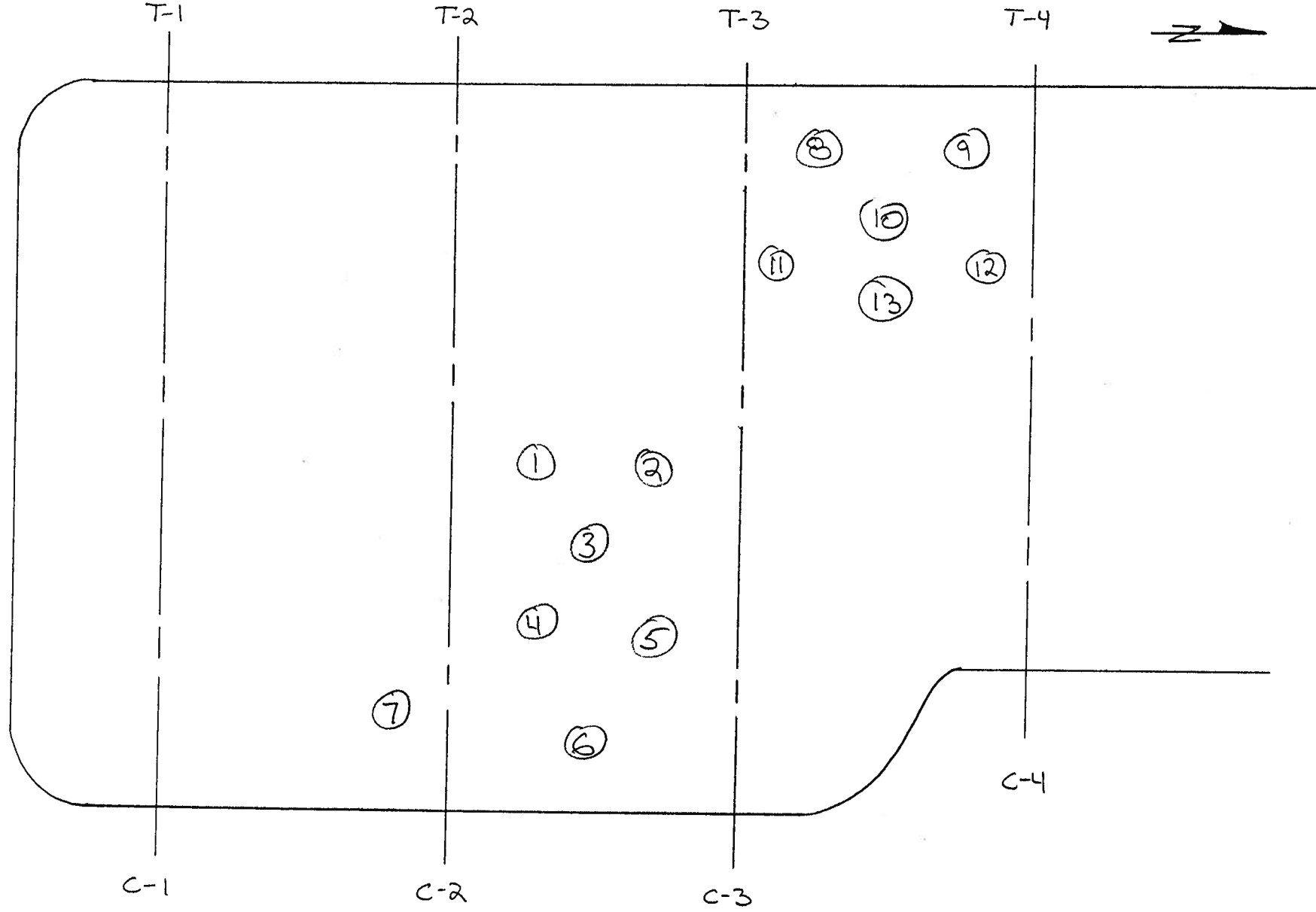
[illegible]

### \*Material Descriptions

Provide a detailed description of backfill material; report material descriptions above by number.

1.	
2.	
	Note: Elev. 0.00 equals existing pavement elevation

\*\*An "X" in this column indicates that a retest is recommended.





## DAILY PROJECT DIARY

One Honey Creek Corporate Cent:  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	MOSTLY CLOUDY	
Temperature	HI 40S	
Wind		
Humidity		

REPORT NO.: \_\_\_\_\_  
DATE: 10-1-04  
DAY: FRI

PROJECT: GREAT LAKES NAVAL BASE-SUPPLY SIDE LANDFILL  
PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.  
CLIENT: NAVY  
CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_  
Field Staking By: \_\_\_\_\_ PROJECT MANAGER: BRIAN SCHNEIDER  
Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
FOREMAN	1	8	BACKHOE CAT 330	1	8
OPERATOR	5	8	DOZER D6 CAT	1	8
			OFF-ROAD DUMP TRK CAT 740	2	8
			SHEEPSFOOT ROLLER	1	8

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300	1600		0630	1500		

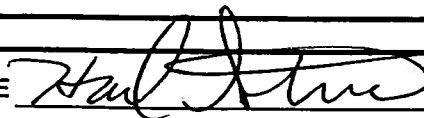
Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS IS FINE GRADING THE NORTH 1/2 OF THE CLAY CAP.  
PLACING 3" +/- ON THE EAST 1/3 OF THE NORTH HALF.

MATERIAL REMAINS A BROWN SILTY CLAY WITH SOME GRAVEL.

ATTACHMENTS: NONE

RESIDENT PROJECT REPRESENTATIVE



## ENGINEERS AND SCIENTISTS

## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather		CLR
Temperature		60
Wind		SW
Humidity		

**REPORT NO.:**

DATE: 10-5

DAY: TUES

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00 LOCATION: G.L.N.B.

CLIENT: NAVY

CONTRACTOR: TOLTEST SUPERINTENDENT: \_\_\_\_\_

Field Staking By: \_\_\_\_\_ PROJECT MANAGER: BRIAN SCHNEIDER

Resident Project Representative: HOWARD STEVENSON

[illegible]

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	1300	1500				1300	1500		

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS PICKED UP CLAY PREVIOUSLY PLACED ON THE SOUTH HALF AND FILLED LOW SPOTS ON THE NORTH HALF. GAS SURVEY CREW VERIFIED 1.5' OF CLAY. NORTH HALF IS READY FOR TOPSOIL

**ATTACHMENTS:**

**RESIDENT PROJECT REPRESENTATIVE**

## DAILY PROJECT DIARY

One Honey Creek Corporate Cent.  
125 South 84th Street, Suite 401  
Milwaukee, WI 53214 - 1470  
Telephone (414) 259-1500  
FAX (414) 259-0037

	AM	PM
Weather	SLDY DRIZZLE	CLDY
Temperature	H 40°S	53
Wind	NE	NE
Humidity		

REPORT NO.:

DATE: 10-20-04

DAY: WEDS

PROJECT: GREAT LAKES NAVAL BASE - SUPPLY SIDE LANDFILL

PROJECT NO.: 20030322.00

LOCATION: G.L.N.B.

CLIENT: NAVY

CONTRACTOR: TOLTEST

SUPERINTENDENT: \_\_\_\_\_

Field Staking By: GASA1

PROJECT MANAGER: BRIAN SCHNEIDER

Resident Project Representative: HOWARD STEVENSON

LABOR			EQUIPMENT		
TYPE	NO.	HRS.	TYPE	NO.	HRS.
OPERATOR	2		DOZER CAT	1	
FOREMAN	1		SHEEPSFOOT ROWER	1	

CONTRACTOR AT PROJECT	From	To	From	To	INSPECTION AT PROJECT	From	To	From	To
	0700	1200	1300			0700			

Record: Construction Activities, Construction Delays, Project Testing, Non-Conformance, Field Problems, Follow-up Actions, Contacts

COMPASS IS PLACING 2<sup>ND</sup> LIFT OF CLAY ON THE SOUTH  
HALF BETWEEN CT-3 & CT-4 ON THE EAST SIDE.  
CLAY IS BEING IMPORTED FROM CONWAY. W.H.HOLMES TEST REPORT # L-1  
DENSITY 123.0 PCF, MOIST 11.5%

GAS SURVEY CREW CHECKED TOPSOIL GRADES ON THE NORTH HALF,  
COMPASS FILLED THE LOW AREAS AND SURVEY CREW CHECKED THEM.

ATTACHMENTS: DENSITY SHEET

RESIDENT PROJECT REPRESENTATIVE

Howard Stevenson

# H. H. HOLMES TESTING LABORATORIES, INC.

• 170 Shepard Avenue • Wheeling, Illinois 60090 • 847-541-4040 • Fax 847-537-9098



October 12, 2004

Report No. L-1

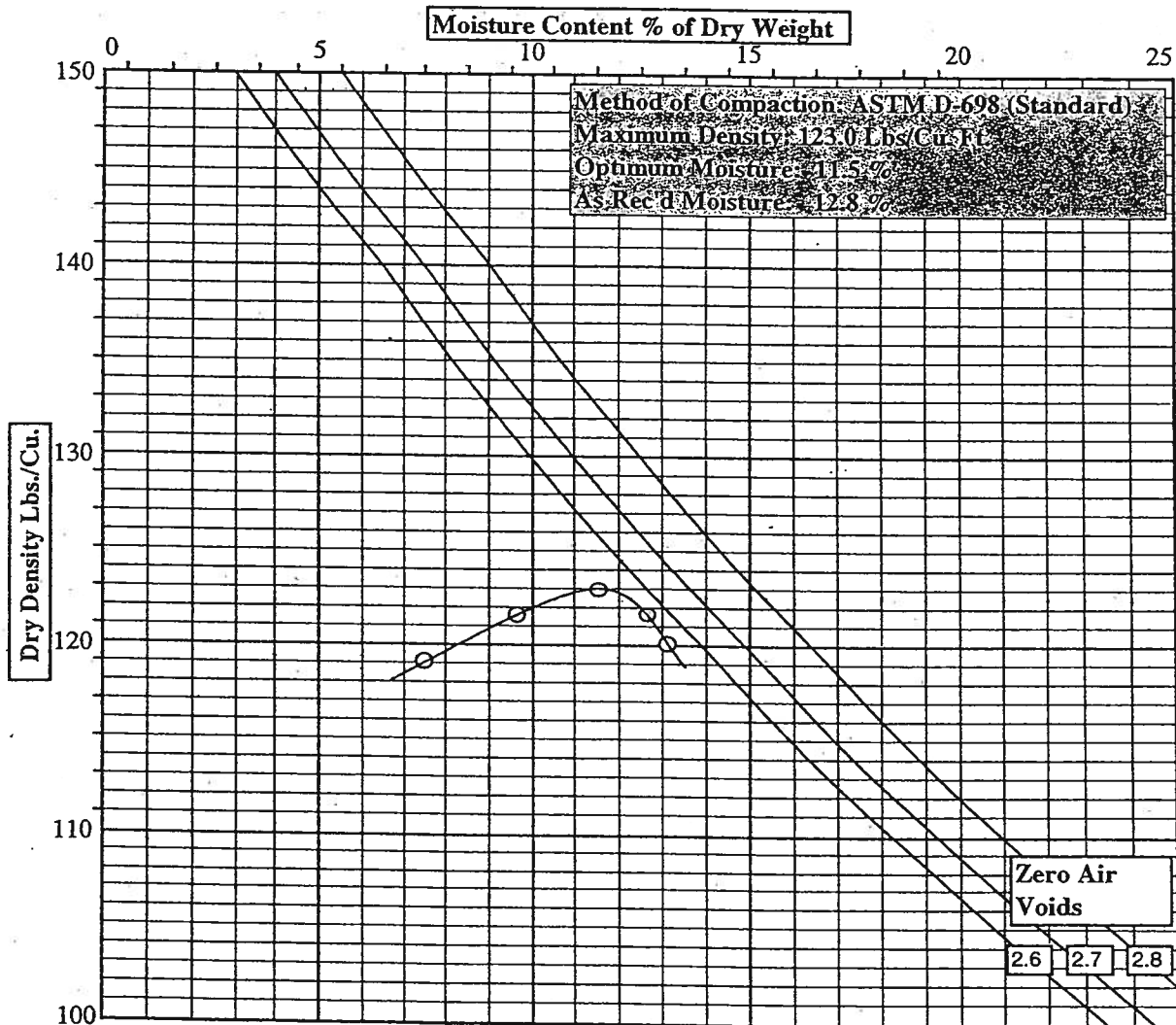
Project ID: 1590-8

Toltest, Inc.  
1000 S. Northpoint Blvd.  
Waukegan, IL 60085

Re: Supply Side Landfill  
NAVSTA Great Lakes  
Great Lakes, IL

## LAKE FOREST, STONE BRIDGE Report of Tests

Subject: Standard Proctor Test of Brown Clayey Sandy Silt Trace Gravel  
Sample ID: Conway  
Pick Up Date: 10/01/04



Respectfully Submitted,

Scott R. Nelson  
President

# H. H. HOLMES TESTING LABORATORIES, INC .



• 170 Shepard Avenue • Wheeling, Illinois 60090 • 847-541-4040 • Fax 847-537-9098

October 12, 2004

Report No. L-2

Project ID: 1590-8

Toltest, Inc.

1000 S. Northpoint Blvd.

Waukegan, IL 60085

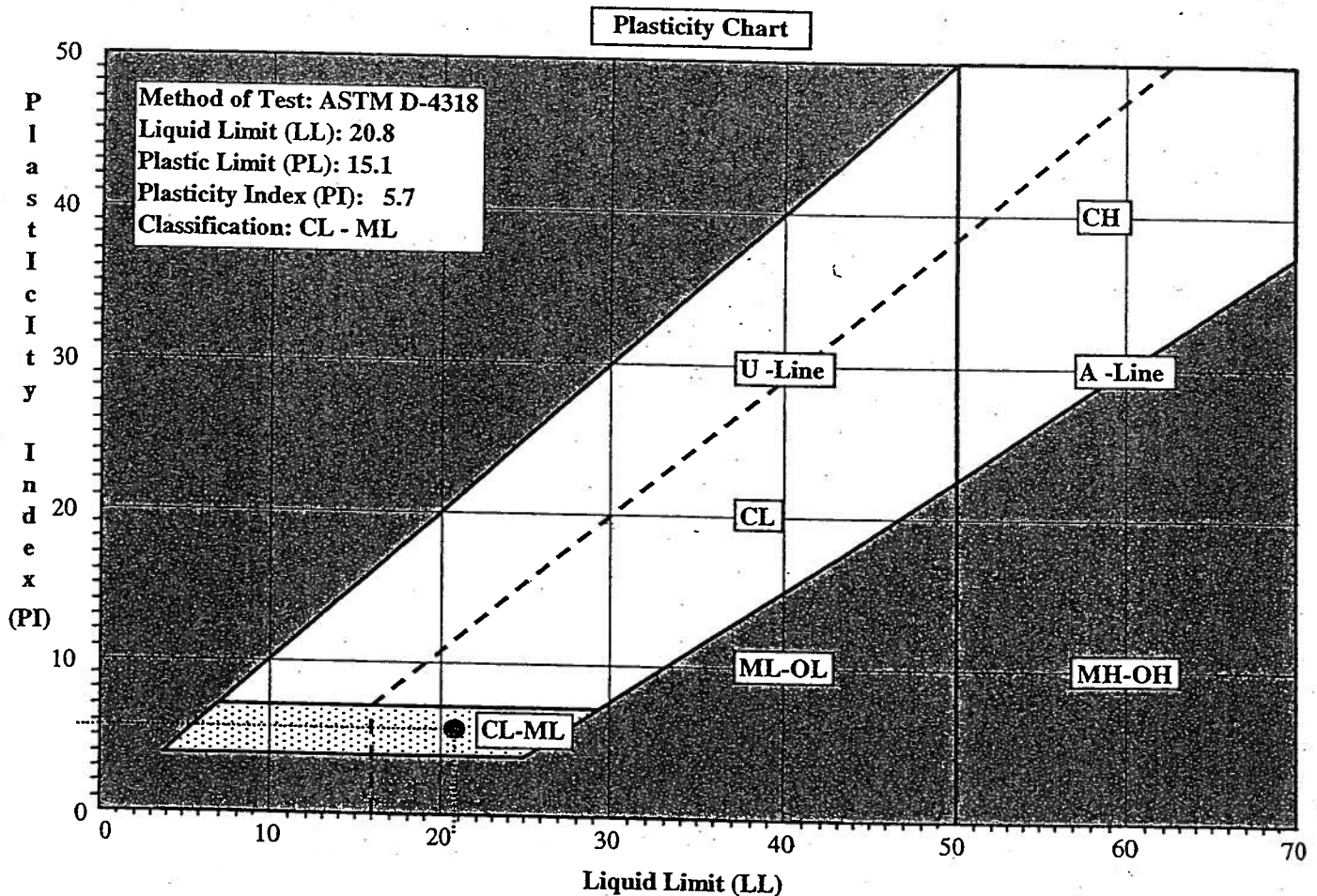
Re: **Supply Side Landfill**  
NAVSTA Great Lakes  
Great Lakes, IL

## Report of Tests

Subject: Atterberg Limits Test of Brown Clayey Sandy Silt Trace Gravel

Sample ID: Conway

Pick Up Date: 10/01/04



Respectfully Submitted,

Scott R. Nelson  
President



# H. H. HOLMES TESTING LABORATORIES, INC .



. 170 Shepard Avenue . Wheeling, Illinois 60090 . 847-541-4040 . Fax 847-537-9098

October 12, 2004

Report No. L-3a

Project ID: 1590-8

Toltest, Inc.

1000 S. Northpoint Blvd.  
Waukegan, IL 60085

Re: Supply Side Landfill  
NAVSTA Great Lakes  
Great Lakes, IL

## Report of Tests

Subject: Sieve Analysis of Brown Clayey Sandy Silt Trace Gravel

Sample ID: Conway

Pick Up Date: 10/01/04

Method: ASTM C-136

## Test Data

Sieve #	Wt. Retained	% Passing
3/4"	0.0	100.0
3/8"	27.2	98.6
#4	67.7	96.4
#10	131.5	93.0
#40	265.0	85.9
#200	514.2	72.7
Total	1885.5	

Respectfully Submitted,

Scott R. Nelson  
President

Toltest, Inc.  
1000 S. Northpoint Blvd.  
Waukegan, IL 60085

Re: Supply Side Landfill  
NAVSTA Great Lakes

Project ID 1590-8

Report No. L-3b

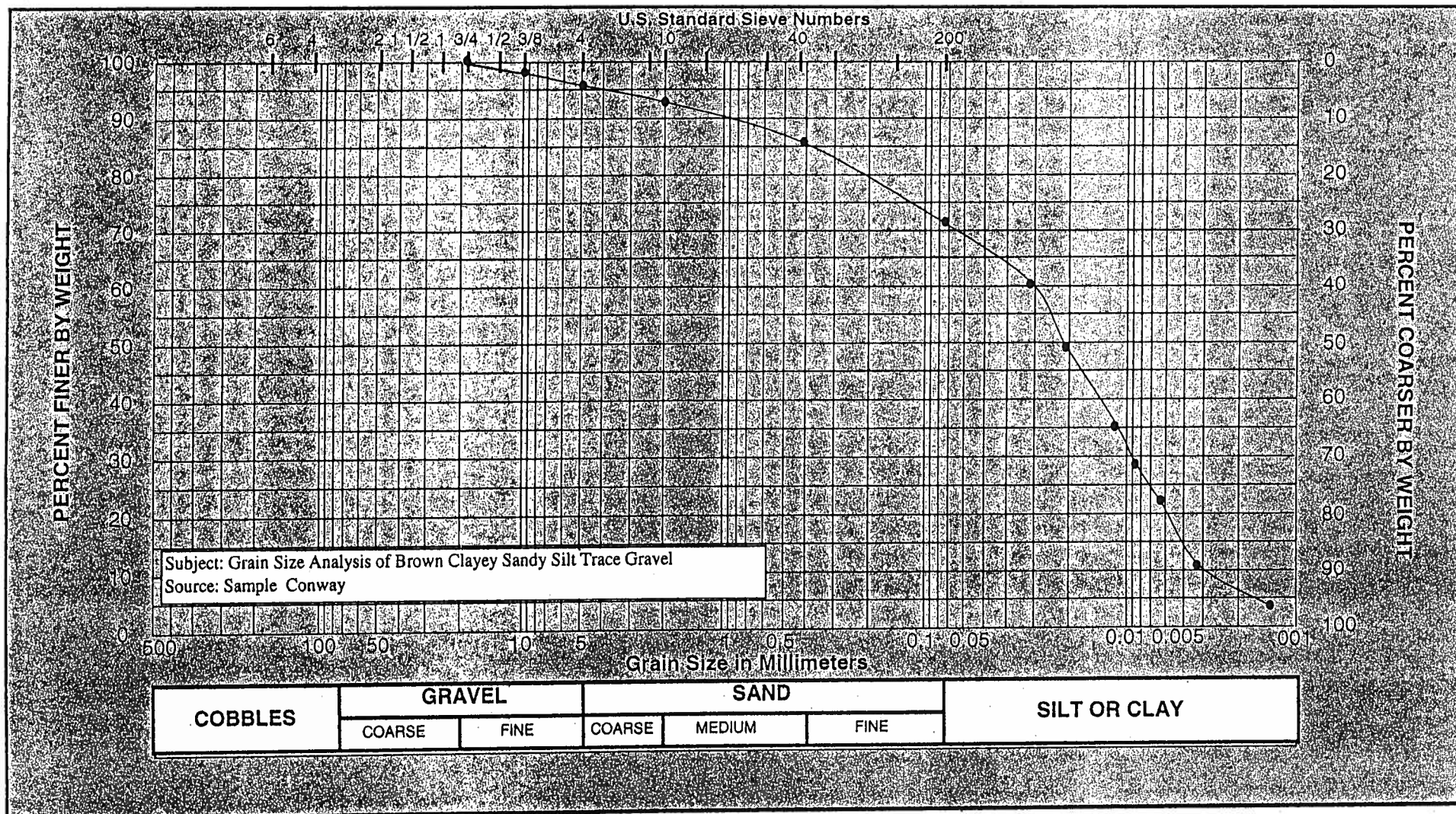


- inspection
- evaluation
- research

*construction materials*

**H.H.HOLMES TESTING LABORATORIES, INC.**

-170 Shepard Avenue - Wheeling, Illinois 60090 - Area Code 847 541-4040-Fax: 847-537-9098



Respectfully submitted,

Scott R. Nelson  
President

# H. H. HOLMES TESTING LABORATORIES, INC.



• 170 Shepard Avenue • Wheeling, Illinois 60090 • 847-541-4040 • Fax 847-537-9098

October 13, 2004

Report No. L-10

Project ID: 1590-8

**Toltest, Inc.**

1000 S. Northpoint Blvd.  
Waukegan, IL 60085

**Re: Supply Side Landfill**  
NAVSTA Great Lakes  
Great Lakes, IL

## Report of Tests

Subject: Hydraulic Conductivity of Soil Samples

Sample ID: Conway

Pick Up Date: 10/01/04

Method of Test: ASTM D-5084 (Re-molded Sample)

## Test Data

Classification of Material	Brown Clayey Sandy Silt Trace Gravel
----------------------------	--------------------------------------

	INITIAL	FINAL
Dry Unit Weight (pcf)	115.3	116.3
Water Content (%)	11.5	15.9
Diameter (cm)	7.606	7.582
Length (cm)	7.857	7.841

Hydraulic Gradient (Maximum)	20.9
Percent Saturation	94.4
Hydraulic Conductivity k (cm/sec)	2.18E-07

Respectfully submitted,

Scott R. Nelson  
President *SRN*

**GRAEF, ANHALT, SCHLOEMER & ASSOCIATES INC.**

## FIELD DENSITY TEST SUMMARY

Test Date: 10-20-04 Project No.: 20030322.00 G.A.S. Technician: Howard Stevenson

Report No.: [REDACTED] of [REDACTED] Density Gage: Brand: Seaman Model No.: C-200 Serial No.: L-168

**Project Name** ..... **Great Lakes Naval Base - Supply Side Landfill**

**Project Location . . . . . Great Lakes Naval Base**

Architect/Engineer..... Graef, Anhalt, Schloemer & Associates

General Contractor . . . . . Toltest

**Earthwork Contractor..... Compass Environmental**

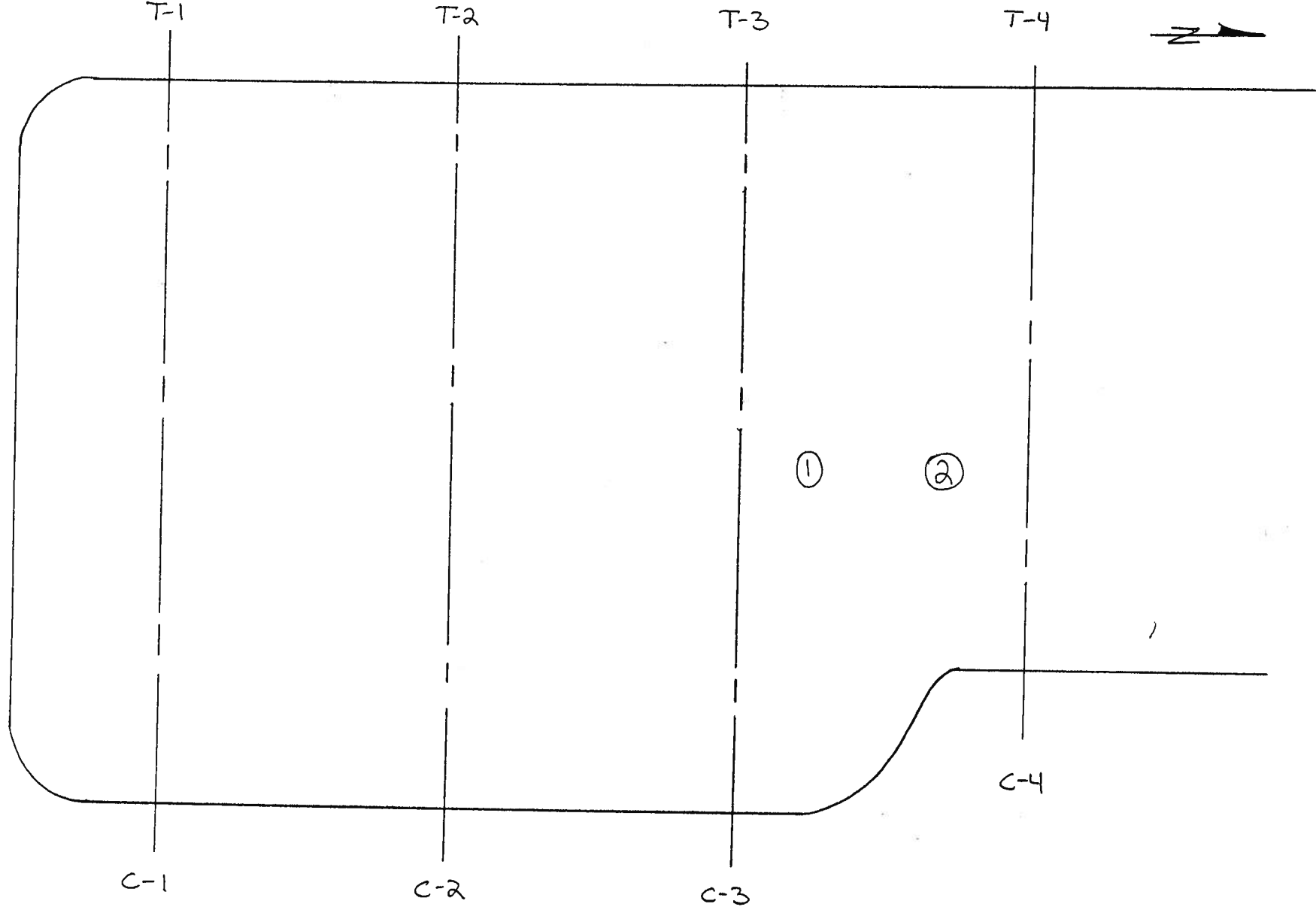
Proctor Method: ☒ Standard ☐ Modified[illegible]

### \*Material Descriptions

Provide a detailed description of backfill material; report material descriptions above by number.

1.	L-1	CONWAY H.H. HOLMES TESTING	BROWN CLAY	123.0 PCF MAX DENSITY
2.				11.5% OPT. MOIST.
		Note: Elev. 0.00 equals existing pavement elevation		

\*\*An "X" in this column indicates that a retest is recommended.





**SCHLEEDE-HAMPTON ASSOCIATES, INC.**

• CONSULTING ENGINEERS

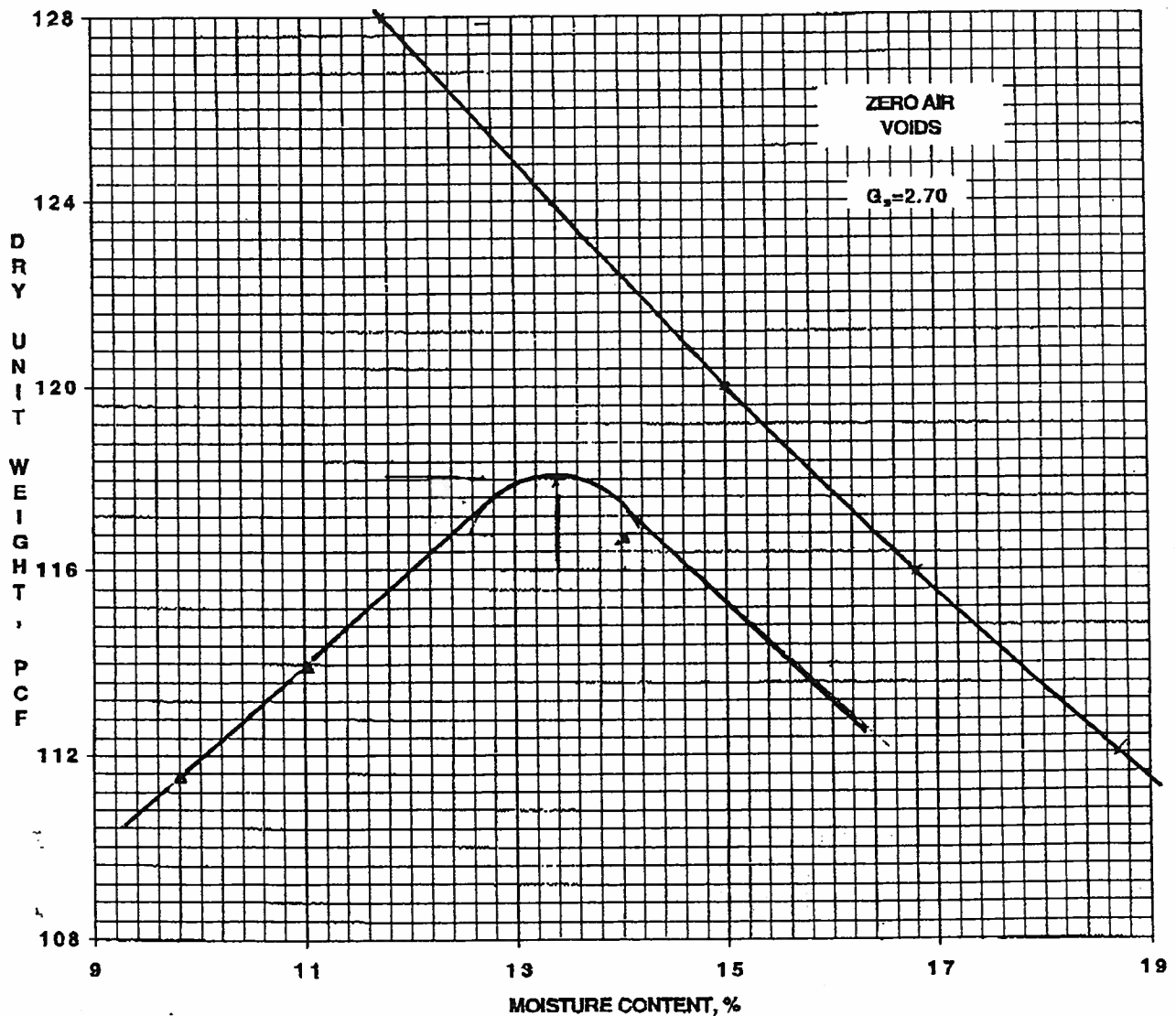
1612 LANDMEIER ROAD, SUITE C, ELK GROVE VILLAGE, IL 60007 (847) 228-1079

**SOIL COMPACTION TEST GRAPH**

PROJECT: Forrestal Landfill  
LOCATION: North Chicago, Illinois  
CLIENT: Graef Anhalt Schloemer and Associates, Inc.

REPORT NO. 4 MDR  
DATE: 6/4/04  
OUR JOB NO. 74275

DESCRIPTION OF SOIL: Brown and grey Silty CLAY, Little Sand, Trace Gravel, CL RAMMER TYPE: MECHANICAL  
TEST PROCEDURE: ASTM D 698 PREPARATION METHOD: DRY  
MATERIAL SOURCE: Stockpile #4 MOISTURE CONTENT AS RECEIVED: 14.0%  
TEST RESULTS: MAXIMUM DRY DENSITY 118.0 PCF OPTIMUM MOISTURE 13.4%

REMARKS:  $G_s$  determined by ASTM D 854. Oversize correction data, if used, is attached.Date Received : 5/24/04\* Date Tested: 5/26/04 By: JFSubmitted: W-7216GB

73738 01  
H. H. HOLMES TESTING LABORATORIES, INC.



• 170 Shepard Avenue • Wheeling, Illinois 60090 • 847-541-4040 • Fax 847-537-9098

August 8, 2005

Project ID: 1590-8

**Toltest, Inc.**  
1000 S. Northpoint Blvd.  
Waukegan, IL 60085

**Re: Supply Side Landfill**  
NAVSTA Great Lakes  
Great Lakes, IL

Gentlemen:

As requested on 7/26/05, a compaction inspection was performed at the above referenced project. The purpose of the inspection was to verify that the fill layer conforms to the project specifications of 95% of the modified proctor density.

The inspection, performed according to ASTM D-2922, was requested to identify the in-situ dry unit weight, moisture content and percent compaction of the fill material. This report does not reflect any variations which may occur beyond the area tested. This inspection was performed by H. H. Holmes Representative. The results are as follows:

<u>No.</u>	<u>Date</u>	<u>Dry Density</u>	<u>% Moisture</u>	<u>% Compaction</u>	<u>Location</u>	<u>Elevation</u>
1	7/26/05	115.2	8.4%	97.6%	SE side middle	1' Blw grade
2	7/26/05	117.9	9.3%	99.9%	NE side	1' Blw grade
3	7/26/05	115.1	9.2%	97.5%	SE corner	1' Blw grade
4	7/26/05	116.2	9.8%	98.5%	Middle	1' Blw grade
5	7/26/05	115.1	9.7%	97.5%	W. side middle	1' Blw grade
6	7/26/05	117.7	8.6%	99.7%	SW side	1' Blw grade
7	7/26/05	116.3	11.1%	98.6%	S. side middle	1' Blw grade

Material: Brown Silty Clay Trace Sand & Gravel  
Max Density (lbs./cu.ft.): 118.0  
Optimum Moisture (%): 14.5%

Respectfully submitted,

Scott R. Nelson  
President *SRN*  
SRN/ew

73738.01

**H. H. HOLMES TESTING LABORATORIES, INC.**

. 170 Shepard Avenue . Wheeling, Illinois 60090 . 847-541-4040 . Fax 847-537-9098

August 8, 2005

Project ID: 1590-8

**Toltest, Inc.**

1000 S. Northpoint Blvd.  
Waukegan, IL 60085

**Re: Supply Side Landfill**  
NAVSTA Great Lakes  
Great Lakes, IL

Gentlemen:

As requested on 7/29/05, a compaction inspection was performed at the above referenced project. The purpose of the inspection was to verify that the fill layer conforms to the project specifications of 90% of the modified proctor density.

The inspection, performed according to ASTM D-2922, was requested to identify the in-situ dry unit weight, moisture content and percent compaction of the fill material. This report does not reflect any variations which may occur beyond the area tested. This inspection was performed by H. H. Holmes Representative. The results are as follows:

<u>No.</u>	<u>Date</u>	<u>Dry Density</u>	<u>% Moisture</u>	<u>% Compaction</u>	<u>Location</u>	<u>Elevation</u>
1	7/29/05	116.5	13.0%	96.8%	680'N & 40'E of SW corner of Cap	6" Blw final grade
2	7/29/05	118.4	13.3%	98.3%	550'N & 50'E of SW corner of Cap	6" Blw final grade
3	7/29/05	115.4	13.6%	95.8%	350'N & 40'E of SW corner of Cap	6" Blw final grade
4	7/29/05	112.0	14.6%	93.0%	200'N & 50'E of SW corner of Cap	6" Blw final grade
5	7/29/05	115.7	13.3%	96.1%	100'N & 60'E of SW corner of Cap	6" Blw final grade
6	7/29/05	115.1	11.7%	95.6%	90'N & 90'E of SW corner of Cap	6" Blw final grade
7	7/29/05	112.6	14.1%	93.5%	200'N & 80'E of SW corner of Cap	6" Blw final grade
8	7/29/05	119.3	12.3%	99.1%	350'N & 80'E of SW corner of Cap	6" Blw final grade
9	7/29/05	117.2	12.1%	97.3%	500'N & 90'E of SW corner of Cap	6" Blw final grade
10	7/29/05	117.5	12.4%	97.6%	600'N & 80'E of SW corner of Cap	6" Blw final grade
11	7/29/05	118.3	12.7%	98.3%	680'N & 90'E of SW corner of Cap	6" Blw final grade
12	7/29/05	121.1	11.1%	100.6%	680'N & 120'E of SW corner of Cap	6" Blw final grade
13	7/29/05	116.1	14.9%	96.4%	550'N & 120'E of SW corner of Cap	6" Blw final grade

73738.01

## H. H. HOLMES TESTING LABORATORIES, INC.



. 170 Shepard Avenue . Wheeling, Illinois 60090 . 847-541-4040 . Fax 847-537-9098

August 8, 2005

Project ID: 1590-8

Toltest, Inc.  
Supply Side Landfill

<u>No.</u>	<u>Date</u>	<u>Dry Density</u>	<u>% Moisture</u>	<u>% Compaction</u>	<u>Location</u>	<u>Elevation</u>
14	7/29/05	119.6	11.6%	99.3%	400'N & 120'E of SW corner of Cap	6" Blw final grade
15	7/29/05	116.0	13.9%	96.3%	250'N & 130'E of SW corner of Cap	6" Blw final grade
16	7/29/05	113.0	15.1%	93.9%	150'N & 130'E of SW corner of Cap	6" Blw final grade
17	7/29/05	114.7	15.5%	95.3%	60'N & 150'E of SW corner of Cap	6" Blw final grade
18	7/29/05	108.5	17.7%	90.1%	200'N & 200'E of SW corner of Cap	6" Blw final grade
19	7/29/05	112.2	15.0%	93.2%	350'N & 200'E of SW corner of Cap	6" Blw final grade
20	7/29/05	111.2	15.3%	92.4%	500'N & 200'E of SW corner of Cap	6" Blw final grade
21	7/29/05	117.4	13.4%	97.5%	650'N & 200'E of SW corner of Cap	6" Blw final grade
22	7/29/05	118.7	12.5%	98.6%	550'N & 300'E of SW corner of Cap	6" Blw final grade
23	7/29/05	116.2	14.3%	96.5%	400'N & 300'E of SW corner of Cap	6" Blw final grade
24	7/29/05	108.9	11.6%	90.4%	80'N & 300'E of SW corner of Cap	6" Blw final grade
25	7/29/05	108.9	15.1%	90.4%	250'N & 300'E of SW corner of Cap	6" Blw final grade

Material: Gray Trace Brown Silty Clay Trace Sand & Gravel  
 Max Density (lbs./cu.ft.): 120.4  
 Optimum Moisture (%): 13.5%

Respectfully submitted,

Scott R. Nelson  
 President  
 SRN/ew

73738.01

## H. H. HOLMES TESTING LABORATORIES, INC.



• 170 Shepard Avenue • Wheeling, Illinois 60090 • 847-541-4040 • Fax 847-537-9098

August 8, 2005

Project ID: 1590-8

**Toltest, Inc.**  
1000 S. Northpoint Blvd.  
Waukegan, IL 60085

**Re: Supply Side Landfill**  
NAVSTA Great Lakes  
Great Lakes, IL

Gentlemen:

As requested on 8/1/05, a compaction inspection was performed at the above referenced project. The purpose of the inspection was to verify that the fill layer conforms to the project specifications of 90% of the modified proctor density.

The inspection, performed according to ASTM D-2922, was requested to identify the in-situ dry unit weight, moisture content and percent compaction of the fill material. This report does not reflect any variations which may occur beyond the area tested. This inspection was performed by H. H. Holmes Representative. The results are as follows:

<u>No.</u>	<u>Date</u>	<u>Dry Density</u>	<u>% Moisture</u>	<u>% Compaction</u>	<u>Location</u>	<u>Elevation</u>
1	8/1/05	114.4	13.0%	96.9%	West side of land fill from N. end S.	Grade
2	8/1/05	115.8	13.3%	98.1%	West side of land fill from N. end S.	Grade
3	8/1/05	112.7	13.6%	95.5%	West side of land fill from N. end S.	Grade
4	8/1/05	117.1	14.6%	99.2%	West side of land fill from N. end S.	Grade
5	8/1/05	115.1	13.3%	97.5%	West side of land fill from N. end S.	Grade
6	8/1/05	114.7	11.7%	97.2%	West side of land fill from N. end S.	Grade
7	8/1/05	112.8	14.1%	95.6%	West side of land fill from N. end S.	Grade
8	8/1/05	113.6	12.3%	96.3%	West side of land fill from N. end S.	Grade
9	8/1/05	116.9	12.1%	99.1%	West side of land fill from N. end S.	Grade
10	8/1/05	112.2	12.4%	95.1%	West side of land fill from N. end S.	Grade
11	8/1/05	112.3	12.7%	95.2%	West side of land fill from N. end S.	Grade
12	8/1/05	113.7	11.1%	96.4%	West side of land fill from N. end S.	Grade

Material: Brown Silty Clay Trace Sand & Gravel  
Max Density (lbs./cu.ft.): 118.0  
Optimum Moisture (%): 14.5%

Respectfully submitted,

Scott R. Nelson  
President) *SRN*  
SRN/ew

73738.01

## H. H. HOLMES TESTING LABORATORIES, INC.



• 170 Shepard Avenue • Wheeling, Illinois 60090 • 847-541-4040 • Fax 847-537-9098

August 8, 2005

Project ID: 1590-8

**Toltest, Inc.**

1000 S. Northpoint Blvd.  
Waukegan, IL 60085

**Re: Supply Side Landfill**  
NAVSTA Great Lakes  
Great Lakes, IL

Gentlemen:

As requested on 8/2/05, a compaction inspection was performed at the above referenced project. The purpose of the inspection was to verify that the fill layer conforms to the project specifications of 90% of the modified proctor density.

The inspection, performed according to ASTM D-2922, was requested to identify the in-situ dry unit weight, moisture content and percent compaction of the fill material. This report does not reflect any variations which may occur beyond the area tested. This inspection was performed by H. H. Holmes Representative. The results are as follows:

<u>No.</u>	<u>Date</u>	<u>Dry Density</u>	<u>% Moisture</u>	<u>% Compaction</u>	<u>Location</u>	<u>Elevation</u>
1	8/2/05	109.9	15.4%	93.1%	SE corner of land fill	6" Blw grade
2	8/2/05	111.4	15.0%	94.4%	SE corner of land fill	6" Blw grade
3	8/2/05	112.0	14.7%	94.9%	SE corner of land fill	6" Blw grade
4	8/2/05	113.6	14.8%	96.3%	Middle section from N. to S.	Grade
5	8/2/05	111.4	15.4%	94.4%	Middle section from N. to S.	Grade
6	8/2/05	116.7	8.8%	98.9%	Middle section from N. to S.	Grade
7	8/2/05	107.5	18.1%	91.1%	Middle section from N. to S.	Grade
8	8/2/05	116.2	12.7%	98.5%	Middle section from N. to S.	Grade
9	8/2/05	109.2	16.8%	92.5%	Middle section from N. to S.	Grade
10	8/2/05	114.7	15.4%	97.2%	Middle section from N. to S.	Grade
11	8/2/05	115.2	13.8%	97.6%	Middle section from N. to S.	Grade
12	8/2/05	109.1	15.8%	92.5%	Middle section from N. to S.	Grade

Material: Brown Silty Clay Trace Sand & Gravel  
Max Density (lbs./cu.ft.): 118.0  
Optimum Moisture (%): 14.5%

Respectfully submitted,

Scott R. Nelson  
President) #b  
SRN/ew



73738.01

## H. H. HOLMES TESTING LABORATORIES, INC.



. 170 Shepard Avenue . Wheeling, Illinois 60090 . 847-541-4040 . Fax 847-537-9098

August 16, 2005

Project ID: 1590-8

**Toltest, Inc.**  
1000 S. Northpoint Blvd.  
Waukegan, IL 60085

**Re: Supply Side Landfill**  
NAVSTA Great Lakes  
Great Lakes, IL

Gentlemen:

As requested on 8/3/05, a compaction inspection was performed at the above referenced project. The purpose of the inspection was to verify that the fill layer conforms to the project specifications of 90% of the modified proctor density.

The inspection, performed according to ASTM D-2922, was requested to identify the in-situ dry unit weight, moisture content and percent compaction of the fill material. This report does not reflect any variations which may occur beyond the area tested. This inspection was performed by H. H. Holmes Representative. The results are as follows:

<u>No.</u>	<u>Date</u>	<u>Dry Density</u>	<u>% Moisture</u>	<u>% Compaction</u>	<u>Location</u>	<u>Elevation</u>
1	8/3/05	117.2	12.8%	99.3%	East half Landfill N to S	Grade
2	8/3/05	106.6	16.5%	90.3%	East half Landfill N to S	Grade
3	8/3/05	110.1	13.1%	93.3%	East half Landfill N to S	Grade
4	8/3/05	114.3	12.0%	96.9%	East half Landfill N to S	Grade
5	8/3/05	110.4	16.5%	93.6%	East half Landfill N to S	Grade
6	8/3/05	114.0	13.5%	96.6%	East half Landfill S to N	Grade
7	8/3/05	114.2	12.5%	96.8%	East half Landfill S to N	Grade
8	8/3/05	106.9	17.8%	90.6%	East half Landfill S to N	Grade
9	8/3/05	116.2	14.0%	98.5%	East half Landfill S to N	Grade
10	8/3/05	111.9	14.6%	94.8%	East half Landfill S to N	Grade

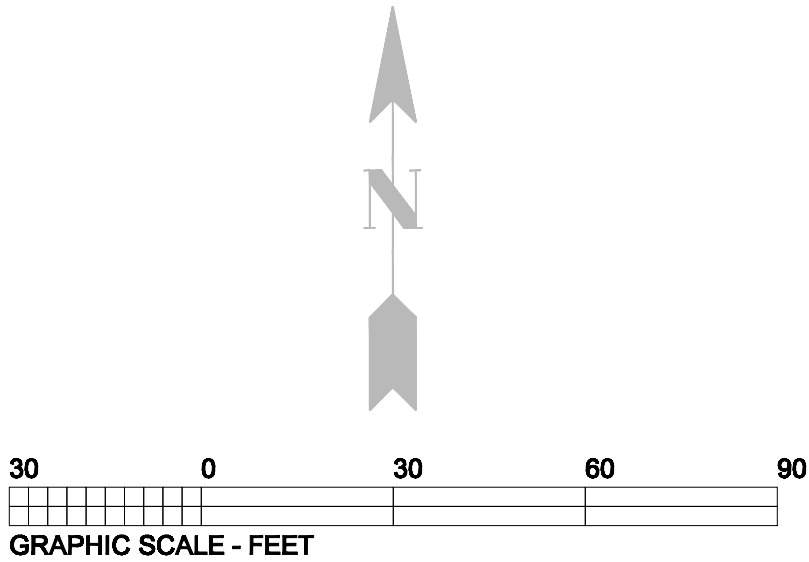
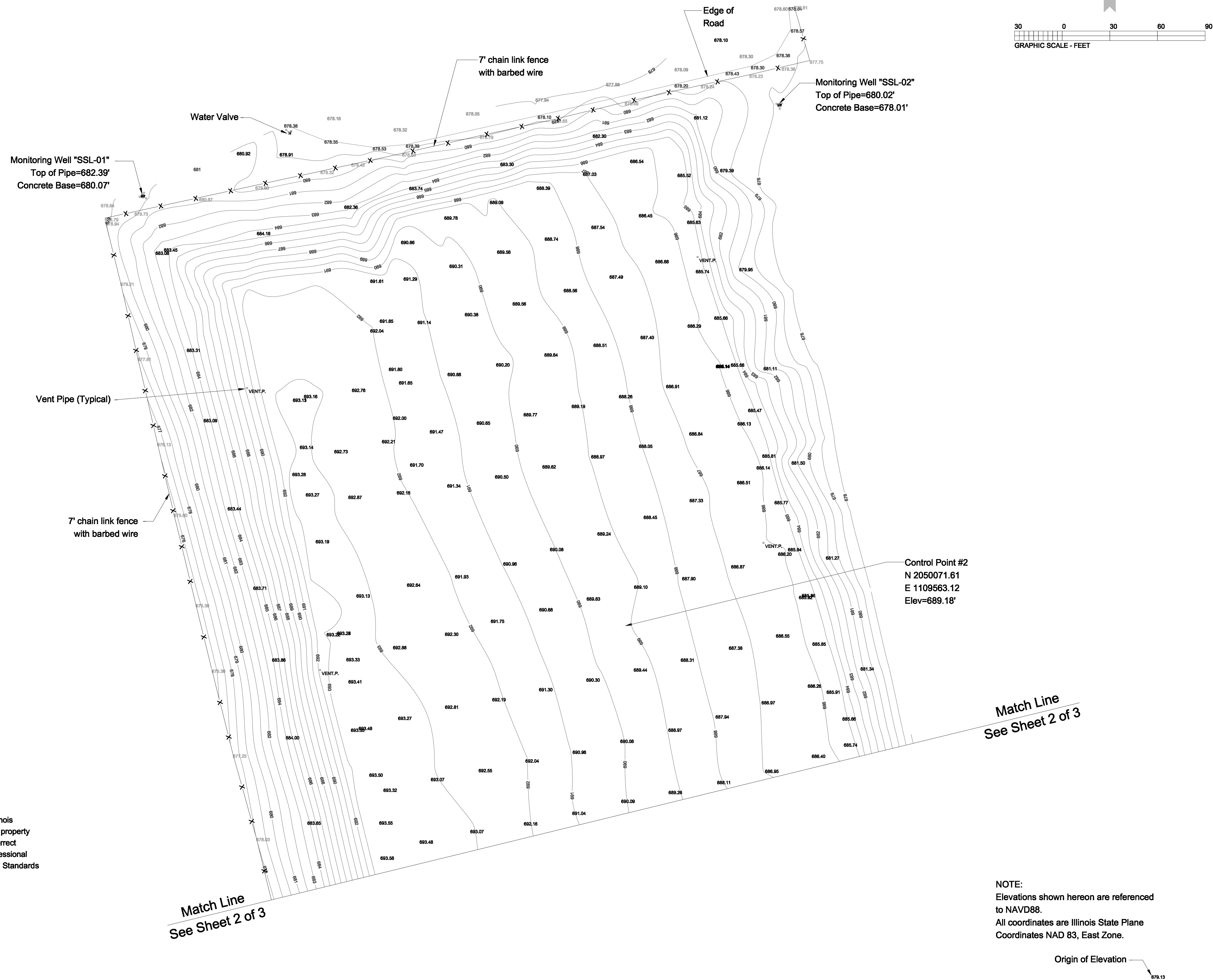
Material: Brown Silty Clay Trace Sand & Gravel  
Max Density (lbs./cu.ft.): 118.0  
Optimum Moisture (%): 14.5%

Respectfully submitted,

Scott R. Nelson  
President   
SRN/ew

## **APPENDIX G**

### **AS-BUILT DRAWINGS**



State of Illinois)  
SS)  
County of Cook)

This is to certify that I, William J. Fleming, an Illinois Professional Land Surveyor, have surveyed the property shown above, that the plat drawn hereon is a correct representation of said survey, and that this Professional Service conforms to the current Illinois Minimum Standards of Practice applicable to Topographic Surveys.

Dated at Chicago, Illinois on this  
8th day of August, A.D. 2008.

Illinois Professional  
Land Surveyor 35-3226  
Expires 11/30/2008

NOTE:  
Elevations shown hereon are referenced  
to NAVD88.  
All coordinates are Illinois State Plane  
Coordinates NAD 83, East Zone.

Origin of Elevation



8501 W. Higgins Road, Suite 280  
Chicago, Illinois 60631  
(773) 399-0112  
Illinois Professional Design  
Corporation 184-000938  
Web Site: [www.gasai.com](http://www.gasai.com)

Other Offices Located In:  
Milwaukee, Wisconsin  
Madison, Wisconsin  
Green Bay, Wisconsin  
Phoenix, Arizona  
Fort Meyers, Florida  
Orlando, Florida

PROJECT NAME:

Site 3  
Supplieside Landfill  
Naval Station Great Lakes  
Great Lakes, IL

SHEET TITLE:

Topographic Survey

Tetra Tech NUS, Inc.

600 River Avenue, Suite 203  
Pittsburg, PA 15212

NO.	DATE	REVISIONS	E
-----	------	-----------	---

PROJECT NUMBER: 20083025.00

DATE: 8/8/2008

DRAWN BY: LAG

CHECKED BY: WJF

PROJECT MANAGER: WJF

SCALE: 1" = 30'

FILE:

SHEET NUMBER

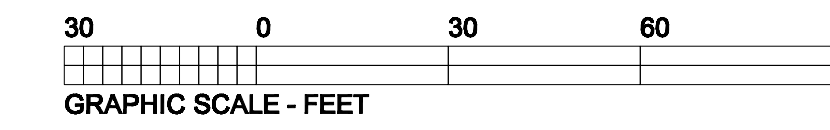
1/3

NO.	DATE	REVISIONS
-----	------	-----------

PROJECT NUMBER: 20083025.00  
DATE: 8/8/2008  
DRAWN BY: LAG  
CHECKED BY: WJF  
PROJECT MANAGER: WJF  
SCALE: 1" = 30'  
FILE:

See Sheet 1 of 3  
Match Line

See Sheet 1 of 3  
Match Line



Guard Post (Typical)

Monitoring Well "SSL-03"  
Top of Pipe=678.47'  
Concrete Base=676.43'

Control Point #7  
N 2049833.64  
E 1109427.73  
Elev=693.56'

7' chain link fence  
with barbed wire

Vent Pipe (Typical)

Monitoring Well "SSL-04"  
Top of Pipe=674.63'  
Concrete Base=672.45'

Control Point #1  
N 2049509.34  
E 1109653.47  
Elev=690.12'

NOTE:  
Elevations shown hereon are referenced  
to NAVD88.  
All coordinates are Illinois State Plane  
Coordinates NAD 83, East Zone.

Origin of Elevation

678.13

Match Line  
See Sheet 3 of 3

Match Line  
See Sheet 3 of 3



**GRAEF  
ANHALT  
SCHLOEMER**  
*and Associates Inc.*

8501 W. Higgins Road, Suite 280  
Chicago, Illinois 60631  
(773) 399-0112  
Illinois Professional Design  
Corporation 184-000938

Web Site: [www.gasai.com](http://www.gasai.com)

Other Offices Located In:

Milwaukee, Wisconsin  
Madison, Wisconsin  
Green Bay, Wisconsin  
Phoenix, Arizona  
Fort Meyers, Florida  
Orlando, Florida

PROJECT NAME:

Site 3

Supplieside Landfill

Naval Station Great Lakes

Great Lakes, IL

SHEET TITLE:

Topographic Survey

Tetra Tech NUS, Inc.

600 River Avenue, Suite 203  
Pittsburg, PA 15212

NO.	DATE	REVISIONS
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PROJECT NUMBER: 20083025.00

DATE: 8/8/2008

DRAWN BY: LAG

CHECKED BY: WJF

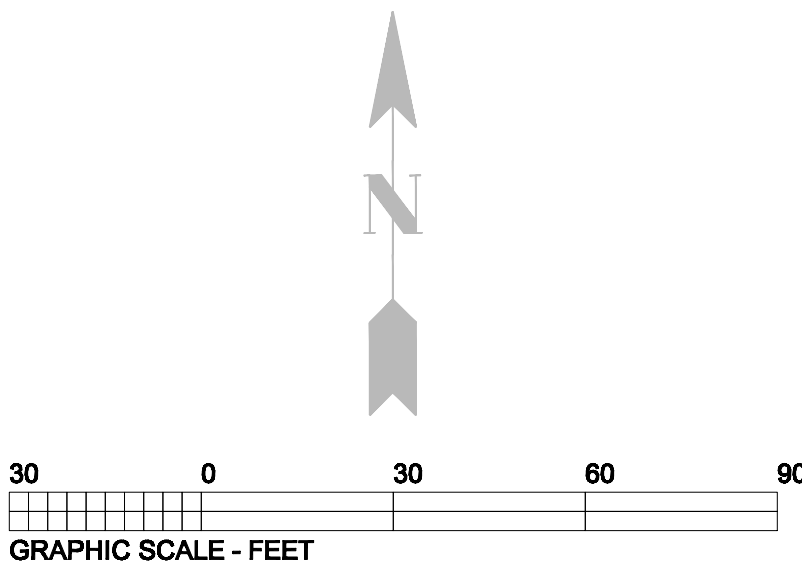
PROJECT MANAGER: WJF

SCALE: 1" = 30'

FILE:

SHEET NUMBER

3/3



See Sheet 2 of 3  
Match Line

Control Point #6  
N 2049401.90  
E 1109921.84  
Elev=683.47'

Monitoring Well "SSL-05"  
Top of Pipe=676.32'  
Concrete Base=673.97'

Guard Post (Typical)

Brush line

Monitoring Well "SSL-06"  
Top of Pipe=678.71'  
Concrete Base=676.70'

Control Point #5  
N 2049121.22  
E 1109739.61  
Elev=691.16'

NOTE:  
Elevations shown hereon are referenced  
to NAVD88.  
All coordinates are Illinois State Plane  
Coordinates NAD 83, East Zone.

Origin of Elevation

678.13

See Sheet 2 of 3  
Match Line

Vent Pipe (Typical)

7' chain link fence  
with barbed wire

## **APPENDIX H**

### **WELL CONSTRUCTION DETAILS**





# MONITORING WELL CONSTRUCTION LOG - STICK-UP

WELL NO. SL-01

PROJECT NO. 73775.01

TOC Elev. 683.02

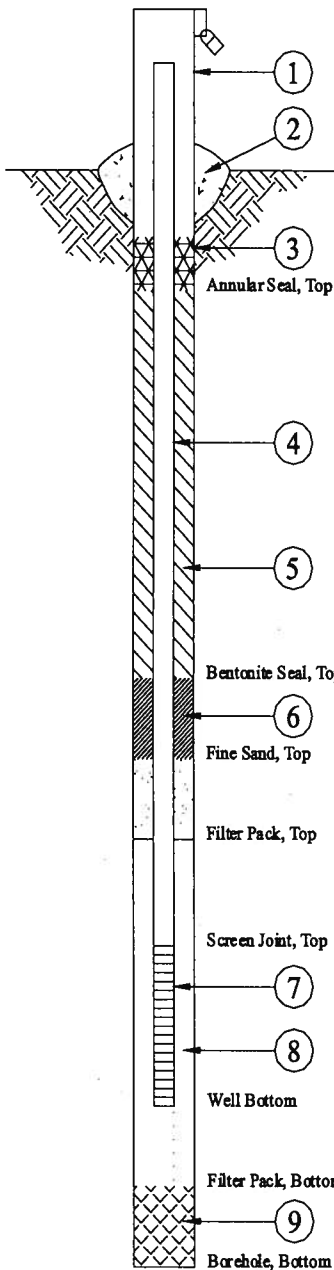
Riser Elev. 682.71

Stick-up (ft) 2.69

Ground Elev. 680.02

Depth (ft) 2

Elev. 678.02



Depth (ft) 6

Elev. 674.02

Depth (ft) N/A

Elev.

Depth (ft) 8

Elev. 672.02

Depth (ft) 10

Elev. 670.02

Depth (ft) 50

Elev. 630.02

Depth (ft) 50

Bottom Depth (ft) 50

Bottom Elev. 630.02

PROJECT NAME Supplieside and Forrestal Landfills

PROJECT LOCATION Naval Station Great Lakes, IL

WELL COMPLETION DATE 5/16/2006

Installed By TTL, Inc.

Drilling Method H.S.A. (Hollow Stem Auger)

Supervised By Sara Mierzwiak, Geologist

Borehole Diameter 8 in. Total Depth 50 ft.

1. Protective Casing  
Dimensions Length 48 in.  
Diameter 4 in.  
Lock? X Yes  No  
Water Tight Well Cap? X Yes  No

2. Surficial Seal Material concrete collar to 1' height

3. Sand Drainage?  Yes X No

4. Solid Riser Diameter and Type 2" PVC  
Solid Riser Length 10'

5. Annular Seal Material Bentonite  
How Installed poured  
Volume Placed 3 bags

6. Bentonite Seal Bentonite chips  
Volume Placed 1 bag

7. Screen Material PVC  
Screen Manufacturer Campbell  
Screen Length 40'  
Slot Size 0.01  
Slotted Interval Length 1/8th"  
Screen Diameter ID 1 7/8th in OD 2 in.

8. Filter Pack Material #5 filter sand  
Volume Added (30) 50-lb bags

9. Backfill Material Below Filter Pack N/A

(All depths measured from ground surface)



# MONITORING WELL CONSTRUCTION LOG - STICK-UP

WELL NO. SL-02

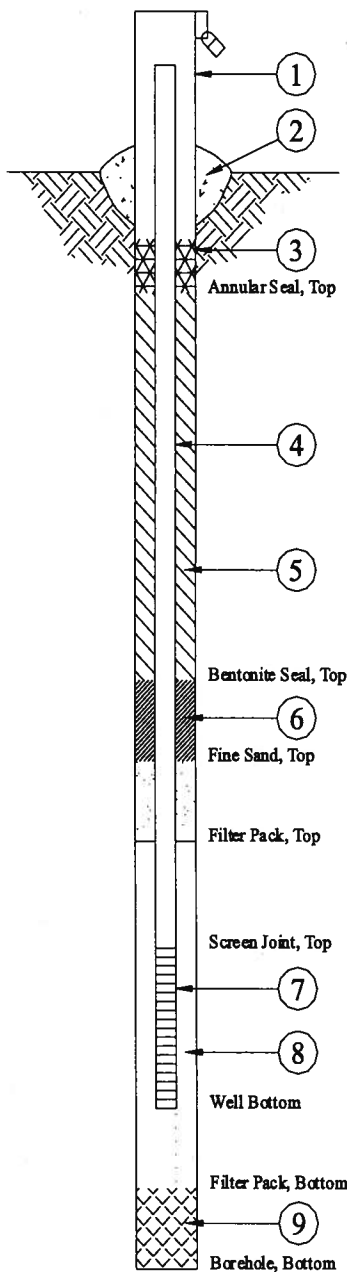
PROJECT NO. 73775.01

TOC Elev. 680.47

Riser Elev. 680.24  
Stick-up (ft) 2.77

Ground Elev. 677.47

Depth (ft) 2  
Elev. 675.47



Depth (ft) 6  
Elev. 671.47  
Depth (ft) N/A  
Elev.

Depth (ft) 8  
Elev. 669.47

Depth (ft) 10  
Elev. 667.47

Depth (ft) 50  
Elev. 627.47

Depth (ft) 50

Bottom Depth (ft) 50  
Bottom Elev. 627.47

PROJECT NAME Supplieside and Forrestal Landfills

PROJECT LOCATION Naval Station Great Lakes, IL

WELL COMPLETION DATE 5/17/2006

Installed By TTL, Inc.

Drilling Method H.S.A. (Hollow Stem Auger)

Supervised By Sara Mierzwiak, Geologist

Borehole Diameter 8 in. Total Depth 50 ft.

1. Protective Casing  
Dimensions Length 48 in.  
Diameter 4 in.  
Lock? X Yes  No  
Water Tight Well Cap? X Yes  No

2. Surficial Seal Material concrete collar to 1' height

3. Sand Drainage?  Yes X No

4. Solid Riser Diameter and Type 2" PVC  
Solid Riser Length 10'

5. Annular Seal Material Bentonite  
How Installed poured  
Volume Placed 3 bags

6. Bentonite Seal Bentonite chips  
Volume Placed 1 bag

7. Screen Material PVC  
Screen Manufacturer Campbell  
Screen Length 40'  
Slot Size 0.01  
Slotted Interval Length 1/8th"  
Screen Diameter ID 1 7/8th in OD 2 in.

8. Filter Pack Material #5 filter sand  
Volume Added (30) 50-lb bags

9. Backfill Material Below Filter Pack N/A

(All depths measured from ground surface)



# MONITORING WELL CONSTRUCTION LOG - STICK-UP

WELL NO. SL-03

PROJECT NO. 73775.01

TOC Elev. 678.83

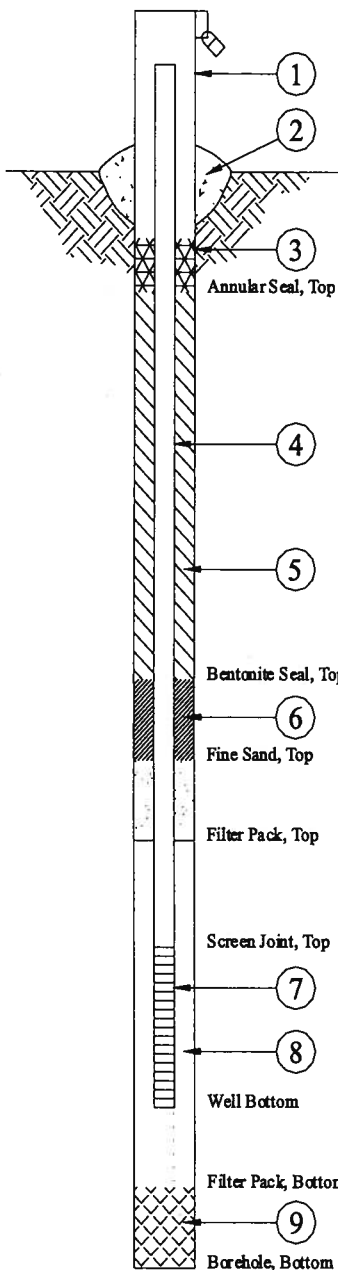
Riser Elev. 678.68

Stick-up (ft) 2.85

Ground Elev. 675.83

Depth (ft) 2

Elev. 673.83



Depth (ft) 6

Elev. 669.83

Depth (ft) N/A

Elev.

Depth (ft) 8

Elev. 667.83

Depth (ft) 10

Elev. 665.83

Depth (ft) 50

Elev. 625.83

Depth (ft) 50

Bottom Depth (ft) 50

Bottom Elev. 625.83

PROJECT NAME Supplieside and Forrestal Landfills

PROJECT LOCATION Naval Station Great Lakes, IL

WELL COMPLETION DATE 5/23/2006

Installed By TTL, Inc.

Drilling Method H.S.A. (Hollow Stem Auger)

Supervised By Tim Boos, Geologist

Borehole Diameter 8 in. Total Depth 50 ft.

1. Protective Casing  
Dimensions Length 48 in.  
Diameter 4 in.  
Lock? X Yes  No  
Water Tight Well Cap? X Yes  No

2. Surficial Seal Material concrete collar to 1' height

3. Sand Drainage?  Yes X No

4. Solid Riser Diameter and Type 2" PVC  
Solid Riser Length 10'

5. Annular Seal Material Bentonite  
How Installed poured  
Volume Placed 3 bags

6. Bentonite Seal Bentonite chips  
Volume Placed 1 bag

7. Screen Material PVC  
Screen Manufacturer Campbell  
Screen Length 40'  
Slot Size 0.01  
Slotted Interval Length 1/8th"  
Screen Diameter ID 1 7/8th in OD 2 in.

8. Filter Pack Material #5 filter sand  
Volume Added (30) 50-lb bags

9. Backfill Material Below Filter Pack N/A

(All depths measured from ground surface)



# MONITORING WELL CONSTRUCTION LOG - STICK-UP

WELL NO. SL-04

PROJECT NO. 73775.01

TOC Elev. 675.07

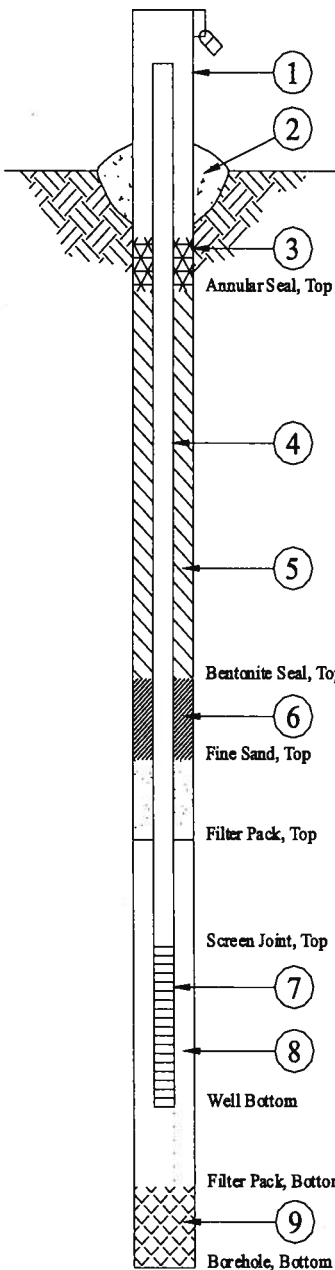
Riser Elev. 674.94

Stick-up (ft) 2.87

Ground Elev. 672.07

Depth (ft) 2

Elev. 670.07



Depth (ft) 6

Elev. 666.07

Depth (ft) N/A

Elev.

Depth (ft) 8

Elev. 664.07

Depth (ft) 10

Elev. 662.07

Depth (ft) 50

Elev. 622.07

Depth (ft) 50

Bottom Depth (ft) 50

Bottom Elev. 622.07

PROJECT NAME Supplieside and Forrestal Landfills

PROJECT LOCATION Naval Station Great Lakes, IL

WELL COMPLETION DATE 5/23/2006

Installed By TTL, Inc.

Drilling Method H.S.A. (Hollow Stem Auger)

Supervised By Tim Boos, Geologist

Borehole Diameter 8 in. Total Depth 50 ft.

1. Protective Casing  
Dimensions Length 48 in.  
Diameter 4 in.  
Lock? X Yes  No  
Water Tight Well Cap? X Yes  No

2. Surficial Seal Material concrete collar to 1' height

3. Sand Drainage?  Yes X No

4. Solid Riser Diameter and Type 2" PVC  
Solid Riser Length 10'

5. Annular Seal Material Bentonite  
How Installed poured  
Volume Placed 3 bags

6. Bentonite Seal Bentonite chips  
Volume Placed 1 bag

7. Screen Material PVC  
Screen Manufacturer Campbell  
Screen Length 40'  
Slot Size 0.01  
Slotted Interval Length 1/8th"  
Screen Diameter ID 1 7/8th in OD 2 in.

8. Filter Pack Material #5 filter sand  
Volume Added (30) 50-lb bags

9. Backfill Material Below Filter Pack N/A

(All depths measured from ground surface)



# MONITORING WELL CONSTRUCTION LOG - STICK-UP

WELL NO. SL-05

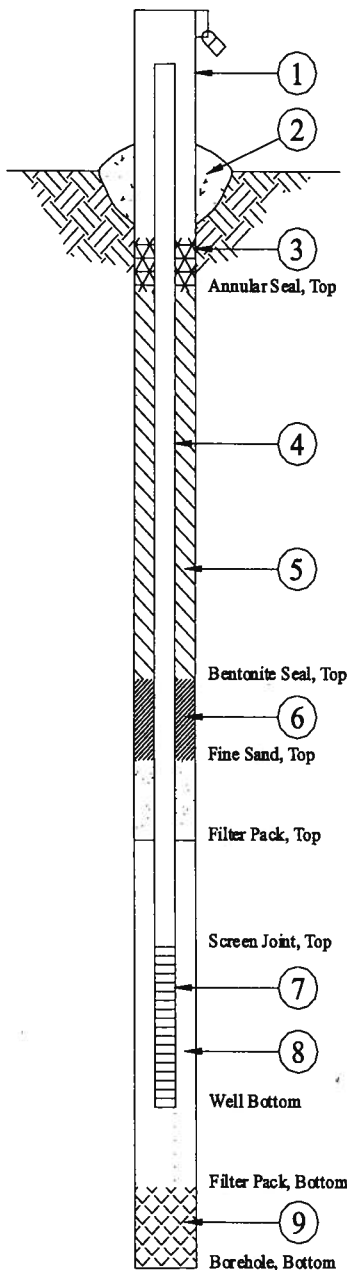
PROJECT NO. 73775.01

TOC Elev. 676.88

Riser Elev. 676.69  
Stick-up (ft) 2.81

Ground Elev. 673.88

Depth (ft) 2  
Elev. 671.88



Depth (ft) 6  
Elev. 667.88  
Depth (ft) N/A  
Elev.

Depth (ft) 8  
Elev. 665.88

Depth (ft) 10  
Elev. 663.88

Depth (ft) 50  
Elev. 623.88

Depth (ft) 50

Bottom Depth (ft) 50  
Bottom Elev. 623.88

PROJECT NAME Supplieside and Forrestal Landfills

PROJECT LOCATION Naval Station Great Lakes, IL

WELL COMPLETION DATE 5/22/2006

Installed By TTL, Inc.

Drilling Method H.S.A. (Hollow Stem Auger)

Supervised By Tim Boos, Geologist

Borehole Diameter 8 in. Total Depth 50 ft.

1. Protective Casing  
Dimensions Length 48 in.  
Diameter 4 in.  
Lock? X Yes  No  
Water Tight Well Cap? X Yes  No

2. Surficial Seal Material concrete collar to 1' height

3. Sand Drainage?  Yes X No

4. Solid Riser Diameter and Type 2" PVC  
Solid Riser Length 10'

5. Annular Seal Material Bentonite  
How Installed poured  
Volume Placed 3 bags

6. Bentonite Seal Bentonite chips  
Volume Placed 1 bag

7. Screen Material PVC  
Screen Manufacturer Campbell  
Screen Length 40'  
Slot Size 0.01  
Slotted Interval Length 1/8th"  
Screen Diameter ID 1 7/8th in OD 2 in.

8. Filter Pack Material #5 filter sand  
Volume Added (30) 50-lb bags

9. Backfill Material Below Filter Pack N/A

(All depths measured from ground surface)



# MONITORING WELL CONSTRUCTION LOG - STICK-UP

WELL NO. SL-06

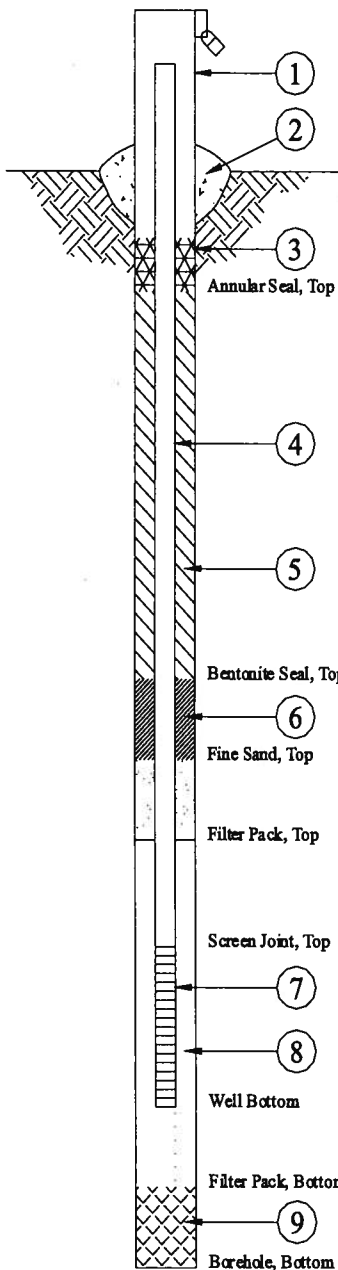
PROJECT NO. 73775.01

TOC Elev. 679.15

Riser Elev. 678.98  
Stick-up (ft) 2.83

Ground Elev. 676.15

Depth (ft) 2  
Elev. 674.15



Depth (ft) 6  
Elev. 670.15  
Depth (ft) N/A  
Elev.

Depth (ft) 8  
Elev. 668.15

Depth (ft) 10  
Elev. 666.15

Depth (ft) 50  
Elev. 626.15

Depth (ft) 50

Bottom Depth (ft) 50  
Bottom Elev. 626.15

PROJECT NAME Supplieside and Forrestal Landfills

PROJECT LOCATION Naval Station Great Lakes, IL

WELL COMPLETION DATE 5/24/2006

Installed By TTL, Inc.

Drilling Method H.S.A. (Hollow Stem Auger)

Supervised By Tim Boos, Geologist

Borehole Diameter 8 in. Total Depth 50 ft.

1. Protective Casing  
Dimensions Length 48 in.  
Diameter 4 in.  
Lock? X Yes  No  
Water Tight Well Cap? X Yes  No

2. Surficial Seal Material concrete collar to 1' height

3. Sand Drainage?  Yes X No

4. Solid Riser Diameter and Type 2" PVC  
Solid Riser Length 10'

5. Annular Seal Material Bentonite  
How Installed poured  
Volume Placed 3 bags

6. Bentonite Seal Bentonite chips  
Volume Placed 1 bag

7. Screen Material PVC  
Screen Manufacturer Campbell  
Screen Length 40'  
Slot Size 0.01  
Slotted Interval Length 1/8th"  
Screen Diameter ID 1 7/8th in OD 2 in.

8. Filter Pack Material #5 filter sand  
Volume Added (30) 50-lb bags

9. Backfill Material Below Filter Pack N/A

(All depths measured from ground surface)